HIGH VACUUM EXTRACTION TURBINE

LINC EXTRACTOR SC

SAFETY INSTRUCTIONS FOR OPERATING AND MAINTENANCE

No EM61000625

ISSUE	**: EN**	**Instructions**	**REF: 8695 8470**
REVISION	**: A**		
DATE	**: 09 - 2024**		**Original instructions**

LINCOLN® ELECTRIC

Thank you very much for the trust you have shown by choosing this piece of equipment. It will give you trouble-free service if it is used and maintained as recommended.

Its design, component specifications and manufacturing are in accordance with applicable European directives.

Please refer to the CE declaration enclosed to identify the directives applicable to it.

The manufacturer shall not be liable for any combination of parts not recommended by it.

For your safety, please follow the non-limitative list of recommendations and obligations, a large part of which are included in the Labour Code.

Please inform your supplier if you find any error in this instruction manual.

Table of contents

INFORMATION

This technical literature is intended for the following machines or products:

- **Linc Extractor SC** ☛ extraction turbine EM61000625

These instructions and the product covered by them refer to applicable standards.

Use of the equipment:
Please read this manual before you start handling, installing or using the machine. Keep the manual safe in a place known to the machine user and maintenance personnel until the machine is finally destroyed.
This manual explains how to transport, install, use and maintain the machine. It cannot in any event replace the experience of the user for operations of varying difficulty.
Before the machine is used by a new user, make sure that they have read this manual and understood all the explanations provided.
For any further information, please feel free to contact the technical staff of **Lincoln Electric**.

Display and pressure gauge:

Measurement instruments or displays of voltage, intensity, speed, accuracy etc. are to be considered as indicators, whether they are analogue or digital.

In spite of all the measures applied, invisible residual risks may still remain.
Residual risks can be reduced if the safety instructions are observed, the machine is used as recommended and general service instructions are followed.

Machine guarantee:
This machine is guaranteed for 12 months from the date of purchase.
During the first 12 months of use, defective parts shall be replaced free of charge providing the damage is not the result of improper use of the machine.
The machine guarantee shall cease automatically when the machine is no longer the property of the original buyer.
The terms of validity of the guarantee shall be subject to verification and acceptance by our sales department.
Any nonconforming use that could damage the machine shall not be covered by the guarantee.
For the guarantee to operate, the equipment must be inspected by our technical department.

Assistance:

Lincoln Electric is at your disposal for any work on your equipment.
Please send any requests to the technical department.

HOT LINE (+33) 825 132 132

MEANING OF SYMBOLS

	Reading the manual/instructions for use is mandatory.		Indicates a hazard.
	Mandatory use of safety shoes.		Warning of an electricity risk or hazard.
	Mandatory use of hearing protection.		Warning of a risk or hazard due to an obstacle on the floor.
	Mandatory use of a safety helmet.		Warning of a risk or hazard of falling with a level change.
	Mandatory use of safety gloves.		Warning of a risk or hazard due to suspended loads.
	Mandatory use of safety glasses.		Warning of a risk or hazard due to a hot surface.
	Mandatory use of a safety visor.		Warning of a risk or hazard due to moving mechanical parts.
	Mandatory use of safety clothing.		Warning of a risk or hazard due to a closing movement of mechanical parts of a machine.
	Make sure you clean the working zone.		Warning of a risk or hazard due to laser radiation.
	Mandatory use of breathing protection.		Warning of a risk or hazard due to an obstacle at a height.
	Visual inspection required.		Warning of a risk or hazard due to the presence of a pointed part.
	Indicates a lubrication operation.		Wearers of pacemakers may not be admitted in the designated area.
	Requires maintenance action.		

DECLARATION OF CONFORMITY

LINCOLN ELECTRIC FRANCE SAS
Avenue Franklin Roosevelt
76120 – LE GRAND QUEVILLY

High Vacuum Extraction Turbine

CE DECLARATION OF CONFORMITY

1) CE/EU DECLARATION OF CONFORMITY

Dear customer,
This CE/EU declaration of conformity certifies that the supplied equipment complies with applicable laws and regulations when used in accordance with the enclosed instructions. Any other assembly or modification would void our certification. That is why you are asked to call in the manufacturer for any modifications you wish to make. Failing that, the company responsible for the modification must repeat the certification process. In that case, we would not be liable for the new certificate in any way. Please hand this document over to your technical department or purchasing department for filing.

DESCRIPTION: **Linc Extractor SC Turbine**

TYPE: **EM61000625**

NUMBER: **See name plate**

2) This equipment complies with European directives.

☒ 2006/42/EC **☒ 2011/65/EU** **☒ 2014/30/EU**

3) Based on the following harmonised standards:

- **EN ISO 12100:2010**
- **EN ISO 12499:2009**
- **EN 60204-1:2018**

4) Air Treatment Products Manager, authorised to compile the technical manufacturing document.

Mr Patrick DEGROOTE
LINCOLN ELECTRIC FRANCE SAS
Avenue Franklin Roosevelt
76120 – LE GRAND QUEVILLY

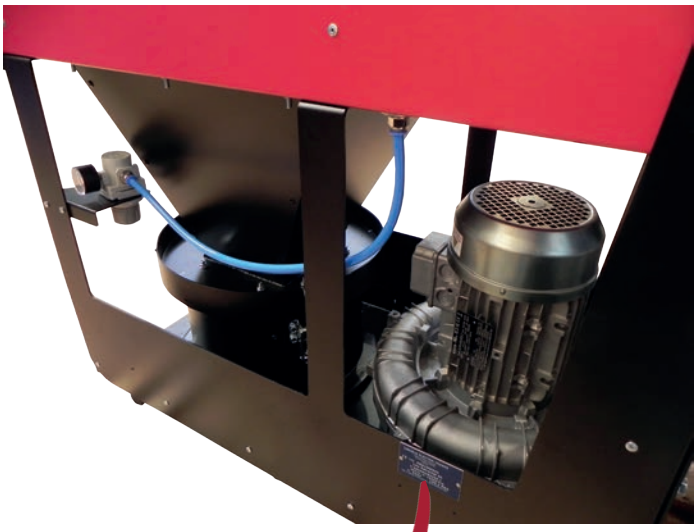
5) The Manufacturer.

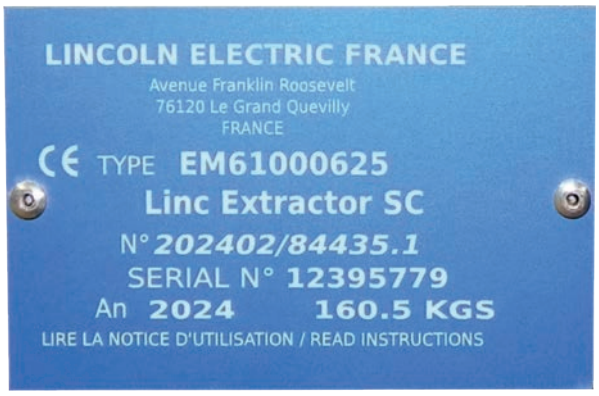
LINCOLN ELECTRIC FRANCE SAS
Avenue Franklin Roosevelt
76120 – LE GRAND QUEVILLY

LE GRAND QUEVILLY,
23/09/2024

A - IDENTIFICATION

The information below should be provided in all correspondence.





B - SAFETY INSTRUCTIONS

For general safety instructions, please refer to the specific manual supplied with the equipment:

86958100 ☛ Air treatment safety booklet

1 - Overall description

For your safety and optimum performance, please read this manual carefully before using the filter.

The innovative design of the **Linc Extractor SC** turbine allows:

- The extraction of welding fumes by MIG and TIG fume extraction torches.
- Control of the extraction rate depending on the configuration of the piece to weld with our **Linc Gun FX** Dual Flow fume extraction torch.

INNOVATIVE:
The colour and touch HMI interface controls the working of the
Linc Extractor SC in several languages and offers a high choice of uses and customisation to suit your needs.

EFFICIENT:
Operating is controlled by a PLC and a frequency variator

RELIABLE:
Offers welder protection while ensuring productivity and high adaptability to your needs.

The mobile **Linc Extractor SC** unit is particularly designed to collect welding fumes by means of a fume extraction torch with a variable flow, during MIG/MAG or TIG welding alike.

The Dual Flow system varies the extraction speed and reduces the extraction rate of the torch in confined areas, which is fully in line with what is required, namely collecting fumes without disrupting the gas shield of the weld pool.

Linc Extractor SC is designed for large-scale production, since it is equipped as standard with a fume filter cartridge, an automatic unclogging system and a dust container.

Benefits:

- Use with air or water cooled MIG/TIG torches.
- Torch extraction rate adjustment for welding in confined areas (MIG Dual Flow)
- Monitoring of vacuum levels and automatic unclogging of the filter cartridge.
- Dust container that can support a large volume of work and makes dust recycling easier.
- Automatic starting of extraction, controlled by the electric arc or by an external contact.
- High air flow that is adjustable and stable over time, thanks to the speed variator which makes up for filter cartridge fouling.
- Simple installation, mobile unit and compact design.
- Minimum maintenance.

Main characteristics:

- Compatible with MIG, MIG Dual Flow and TIG fume extraction torches.
- Diameter of connection to extraction: Ø 50mm for MIG or Ø 38mm for TIG.
- Control by frequency variator and PLC.
- 4.3 inch HMI control screen, touch and colour.
- Manual/Automatic (current sensor or external contact) operating mode
- Metal pre-filter - Class EU2.
- Fine polyester filter - ISO 16890 – ePM10 70%.
- Automatic unclogging by managing the cartridge fouling rate.
- Connection of a second torch in some conditions.
- Compressed air regulator filter kit.
- Large dust container with liner and holding cross.
- Easy to move assembly on wheels.
- Vertical discharge, Ø 80mm.
- Turbine 3 kW

Delivery:

The mobile **Linc Extractor SC** unit is delivered strapped on a half pallet.
Two workers are required for placing it on the ground.

The **Linc Extractor SC** unit is delivered with the following as standard:

- Metal pre-filter
- Filter cartridge
- Electric arc control by current sensor
- Compressed air regulator/pressure gauge/unclogging solenoid valve kit.
- Ø 50mm or Ø 38mm connections for the extraction hoses of MIG and TIG fume extraction torches.
- Three-phase cables without connector, 5 m long.

The following are not included with the **Linc Extractor SC**:

- MIG or TIG fume extraction torches
- Ø 50mm connecting hoses for MIG fume extraction torches or Ø 38mm for fume extraction torches, which are to be ordered depending on the selected fume extraction torch.
- Connection hose with diameter 80mm for extraction discharge.
- Compressed air pipe with inner diameter 10mm for unclogging the cartridge.

The duct system for outdoor discharge or towards a centralised recovery system will depend on the configuration of the end user's workshop, and can thus be supplied on request.

The extraction unit is to be connected to a low-pressure duct system to carry the pollutants (fumes and gas) generated by welding outside the factory.

The **Linc Extractor SC** allows you to extract welding fumes from MIG or TIG fume extraction torches and control the extraction rate depending on the configuration of the piece to weld with the Dual Flow range of fume extraction torches.

The extraction unit is set up and controlled from a multilingual colour touch interface.
The power is controlled by a frequency variator that controls the extraction turbine, and the assembly is managed by a PLC.

2.1 Extraction in Manual or Automatic mode

When the **Linc Extractor SC** has been set up for a MIG or TIG torch, you can select from Manual or Automatic use.

If activated, the Automatic mode puts the machine under the control of the welding machine by means of a current sensor or an external source.

Manual:

- Continuous turbine service.

Automatic:

- As soon as the arc is struck, the extraction system starts up; when the arc goes off, the fan stops (stopping delayed by 25 seconds by default).

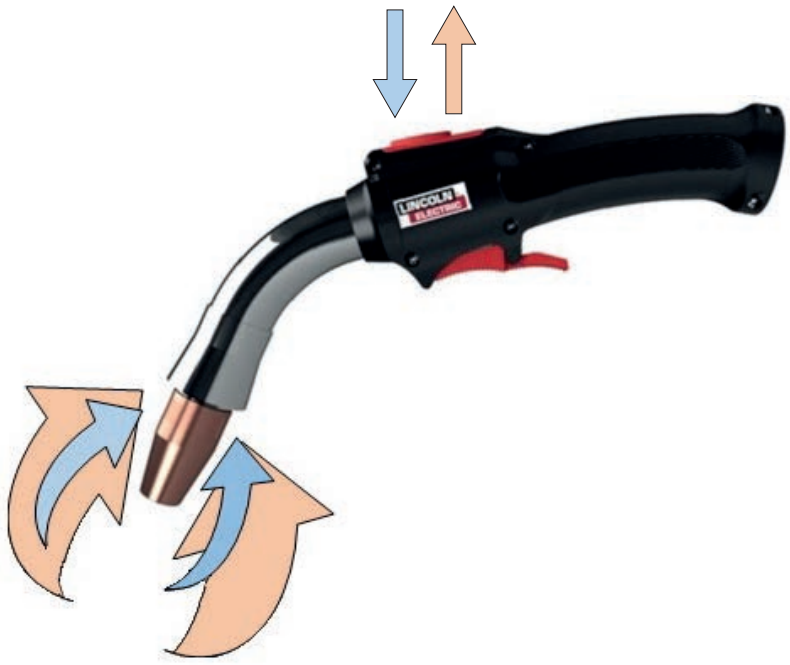
2.2 Patented Dual Flow function

Dual Flow: Control of the extraction rate depending on the configuration of the piece to weld.

The Dual Flow mode, available with **Linc Gun FX Dual Flow** MIG torches, offers the possibility to instantaneously regulate the extraction rate directly from the fume extraction torch while welding.

Depending on the welding applications carried out with a fume extraction torch, the induced extraction speed, which must be 0.35 m/s at the point of emission, can be too high while welding in corners or confined areas and could lead to poor weld quality by disturbing the gas shield.

To address that potential problem, **Lincoln Electric** has developed a range of patented fume extraction torches known as Dual Flow torches, which allow the welder to determine the extraction power to suit the type of welds being made.



3 - Part numbers

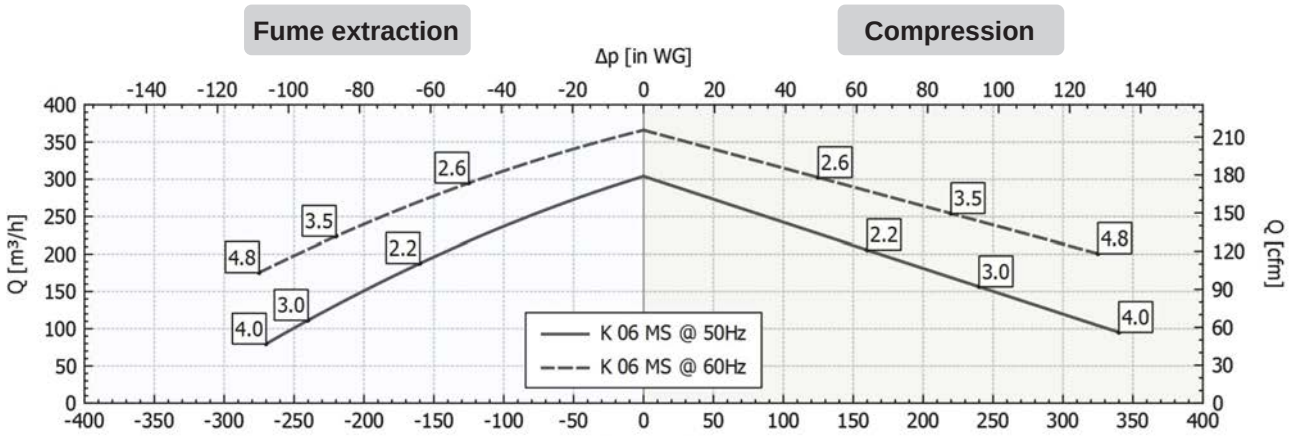
High vacuum extraction turbine for MIG and TIG	Part number
Linc Extractor SC turbine, 400 V/3 Phases – 50 Hz	EM61000625

4 - Technical data

4.1 Technical specifications

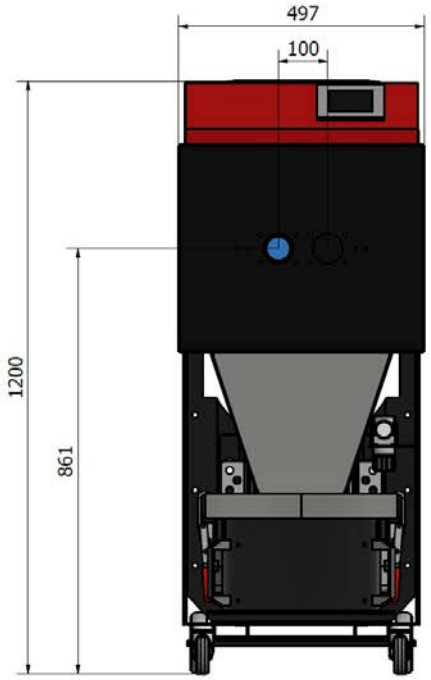
Description	Unit	LINC EXTRACTOR SC
Machine power rating	kW	3
Power supply voltage	V	400 - 3 Phases
Max. vacuum	kPa	24
Free flow rate	m³/h	304
Inlet connection	mm	38 TIG/50 MIG
Outlet connection	mm	80
Noise	dB	70

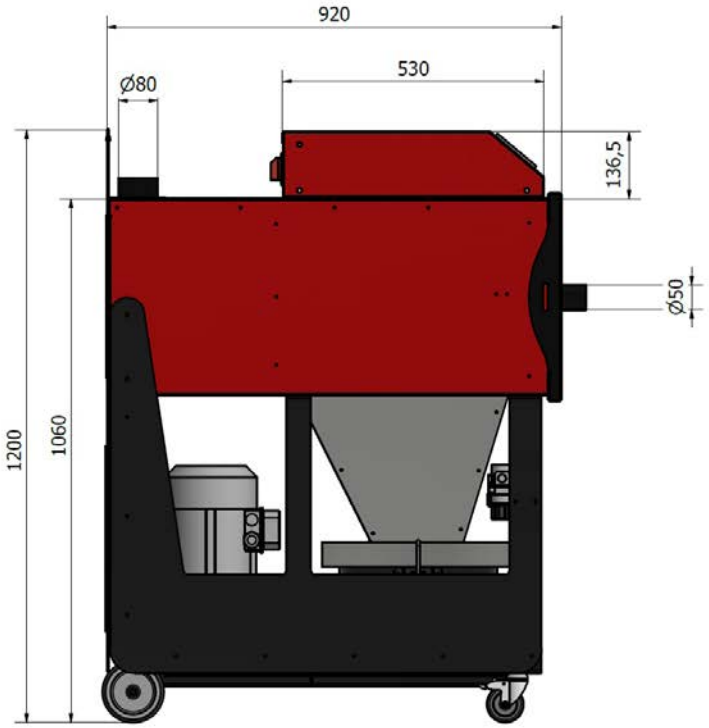
4.2 Turbine curves



4.3 Weight and dimensions

Description	Unit	LINC EXTRACTOR SC
Machine weight	kg	160.5
Machine body width	mm	497
Machine body depth	mm	920
Machine body height	mm	1200

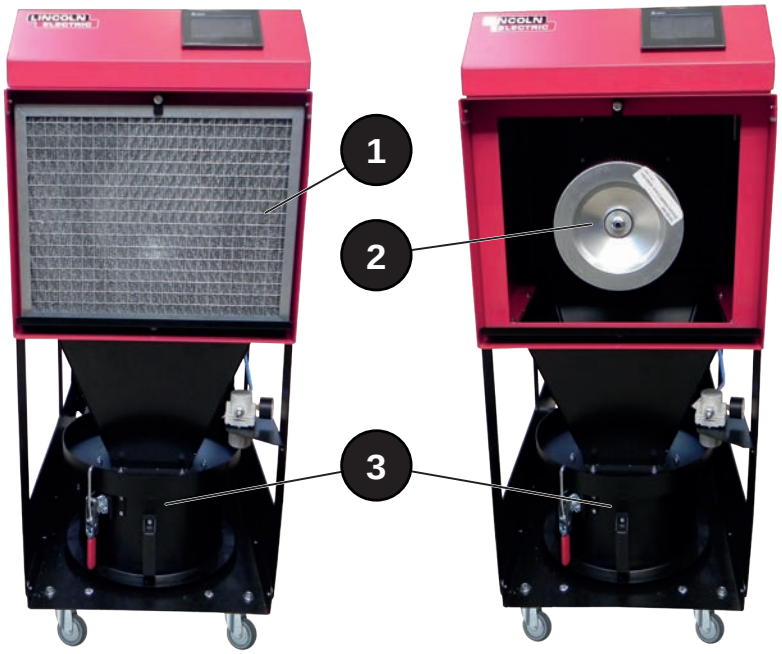




5.1 Description of external elements

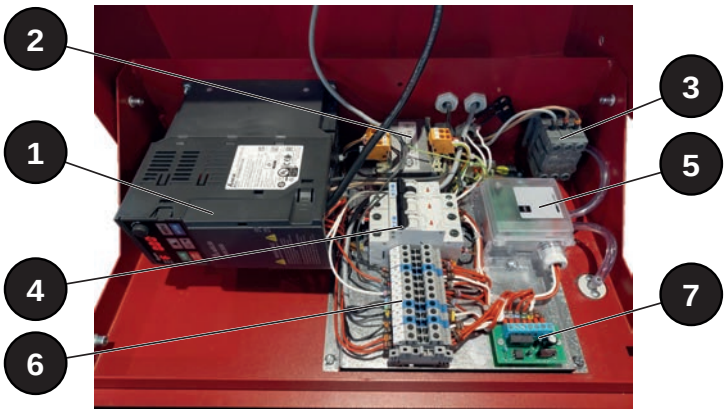
Reference	Description
1	HMI control screen
2	Electrical cabinet
3	Fitting for torches, 38mm or 50mm
4	Pre-filter/filter cartridge extraction box
5	Turbine 3 kW
6	Dust container
7	Compressed air regulator
8	Padlockable disconnector
9	Dual Flow torch control
10	Current sensor/External control input
11	Solenoid valve control
12	Mains power cable
13	Turbine power cable

5.2 Description of internal elements



Reference	Description
1	Metal pre-filter
2	Filter cartridge
3	Dust recovery container

5.3 Description of electrical cabinet



Reference	Description
1	3kW variator
2	400V/24V transformer
3	Disconnecting switch
4	Circuit breakers D1 – 400V power supply/D2 – 24V power supply
5	Vacuum probe
6	Connecting terminal block
7	Current sensor printed circuit board

1 - Installation conditions

The machine must be located in accordance with safety standards to keep personnel safe.

Arrangement of cables and hoses
The customer must provide a means to support and protect cables and flexible hoses from mechanical, chemical or thermal damage.

2 - Handling of Linc Extractor SC

The **Linc Extractor SC** unit is on wheels, which will make it easier to put the turbine in place in the identified location in the workshop.

While moving it, please take account of the surface condition of the floor, considering the weight of the **Linc Extractor SC** (160kg).

The front drive wheels have brakes.
Once the **Linc Extractor SC** is in place, the brakes must be locked.

Please note that this extraction unit must be connected by a 80mm diameter hose to a low-pressure duct network for outdoor discharge (along cladding or from the roof) or a network of collecting ducts with ventilation.

The customer is responsible for regularly checking the condition of the hoses. Weekly visual maintenance. The cost of any damage to the hose over time is to be paid by the end user, based on the maintenance plan.

3 - Safety warning

Pre-fiter:

The turbine must not operate without a pre-filter, as that would destroy it.

Mechanical components:

The turbine is mechanically protected, so the operator cannot come in contact with the hot parts of the turbine.

Further, the turbine is driven directly by the motor, minimising maintenance and allowing the automation of the welding process.

Before making any connections to the mains, make sure that the information on the identification plate matches the electricity distribution system.

Make sure that there is electrical protection before the electrical connection, with rating that complies with the given extractor plates and a catchment system with an earth connection.

Before you connect your machine to the 400 V system, please make sure that:

- The meter, the overintensity protection system and the electrical installation are compatible with its maximum power rating and its supply voltage.
- It can be connected in a three-phase with earth system, to a socket compatible with the plug on its power cord (mobile equipment).
- If the cable is connected to a fixed point and there is an earth connection, the current may never be cut off by the system offering protection from electric shocks.
- The switch, if there is one, is set to OFF.

Upon powering up:
Check the extraction and discharge direction of the turbine, which is normally tested in the factory.
If inverted, change over two phases at the variable drive OUTPUT.

The customer is responsible for installing the earth connection.
The machine MAY NOT BE connected to an electrical system with no earthing.

4 - Connection to the electrical and pneumatic systems

4.1 Connection to the mains

400V - three phase, no neutral + Earth – 50/60 Hz power supply

All the operations relating to the installation, such as those for assembly, putting into service and maintenance, are to be carried out by qualified personnel under the control of a responsible technician.

The **Linc Extractor SC** must **NECESSARILY** be isolated from all utility supplies while it is being connected.
The disconnection and padlocking of all energy sources is **mandatory**.

The **Linc Extractor SC** is supplied with a three-phase + earth power cable (no neutral), 4x1.5mm and 5m long.
The cable must be connected to the socket of your electrical system, or it may be wired directly in the electrical cabinet to the terminals dedicated to the extraction unit.

4.2 Connection to the pneumatic system

Use the self-shutting quick connect system supplied with the **Linc Extractor SC**.

The compressed air must be dry, free from impurities or humidity.
For all other information, please contact the technical staff of **Lincoln Electric**.

- Compressed air system supply 6 Bars minimum.
- Compressed air connection:
  - ☛self-shutting quick connect system supplied with the **Linc Extractor SC** for pipe with inner Ø 6.3mm.
  - ☛ Male fitting on the air regulator, self-shutting female fitting mounted on the customer's hose.
- Compressed air pressure regulated to 4.5 bars.

First of all, make sure that all the panels of the extraction unit are shut and locked.

Refer to the electrical diagram of the extraction system and the machine for the wiring.

1 - Verification while starting up

Set the main disconnector located on the rear of the extraction unit to position 1.
The **Linc Extractor SC** is now powered and the HMI screen will be initialised.

Press the Manual button on the HMI screen and the turbine will start.

Press the Manual button on the HMI screen once again and the turbine will stop.

Check the motor rotation direction:
If, at the torch extraction fitting, the **Linc Extractor SC** is blowing air instead of sucking it in, change over two phases at the extraction unit variable drive output.

2 - Connecting the fume extraction torches

Connect the fume extraction torch
- to the feeder for the welding part,
- to the water cooling circuit of the feeder if necessary,
- on the front of the **Linc Extractor SC** extraction unit for the extraction part.

The **Linc Extractor SC** is supplied with two different connections suitable for the extraction hoses of **Linc Gun FX** MIG torches (Ø50mm) or **Linc Torch FX** TIG torches (Ø38mm).

The 50mm diameter connection is mounted as standard, for MIG fume extraction torches
A second Ø 38mm connection for TIG torches is provided. It is to be mounted instead of that for MIG torches.

Water-cooled MIG or TIG torches must necessarily be connected to the cooling circuit of the feeder.

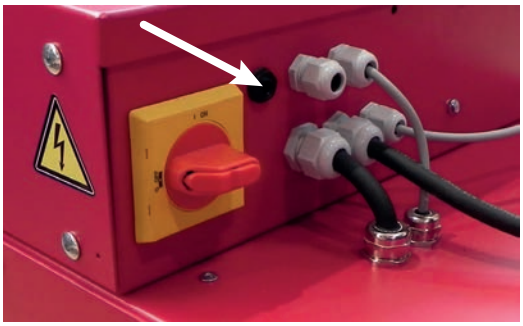
The torch may never be used without the extraction system, or without coolant where applicable, or it may be destroyed.
Indeed, the extraction system also takes charge of cooling the fume extraction torch.

3 - Connecting Dual Flow fume extraction torches

Dual Flow fume extraction torches allow the adjustment of the extraction rate depending on the type of the parts to weld.

To that end, their handles have a pushbutton for adjusting the extraction rate, and a control cable to connect to the rear of the electrical cabinet.

- Connect the extraction hose of the fume extraction torch to the connection on the front of the **Linc Extractor SC**.
- Connect the water cooling circuit of the torch to the feeder if it has one.
- Connect the control of the Dual Flow fume extraction torch to the 6.3mm jack at the rear of the electrical cabinet.



The setup of the Dual Flow control in 2Temps or 4Temps mode is made from the HMI screen of the **Linc Extractor SC**.

10m long extensions of Dual Flow control cables are available as an option, part no W000381156

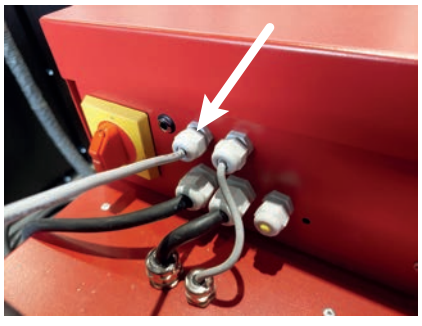
4 - Connecting the current sensor (automatic starting up)

An inductive current sensor, part W000379696, is supplied as standard with the **Linc Extractor SC**.

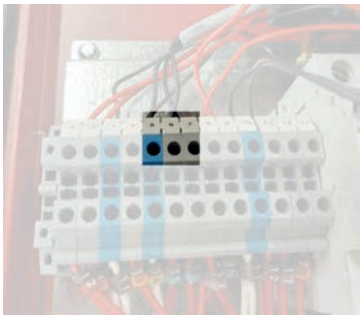
It can detect direct (DC) and alternating (AC) currents above 40A.

The ground cable must be firmly attached along the current sensor.

The end of the current sensor is wired inside the electrical cabinet to the following terminals:



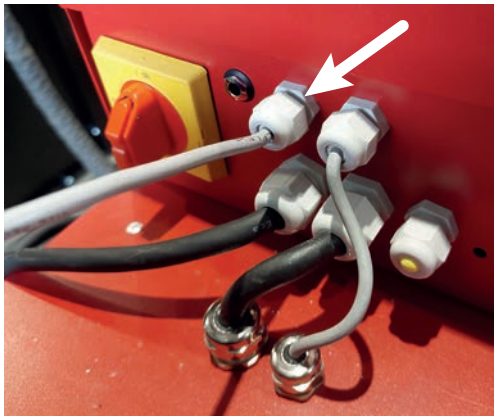
For three-wire sensors	For four-wire sensors
• **X5** for cable 1, • **X6** for cable 2, • **X7** for cable 3.	• **X5** for cable 1, • **X6** for cable 2, • **X7** for cable 4 **able 3 needing insulation)**

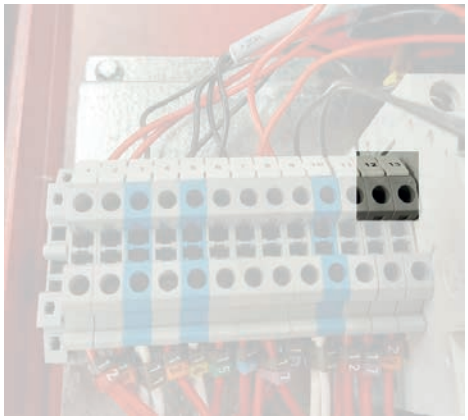


5 - Connecting an external input (automatic starting)

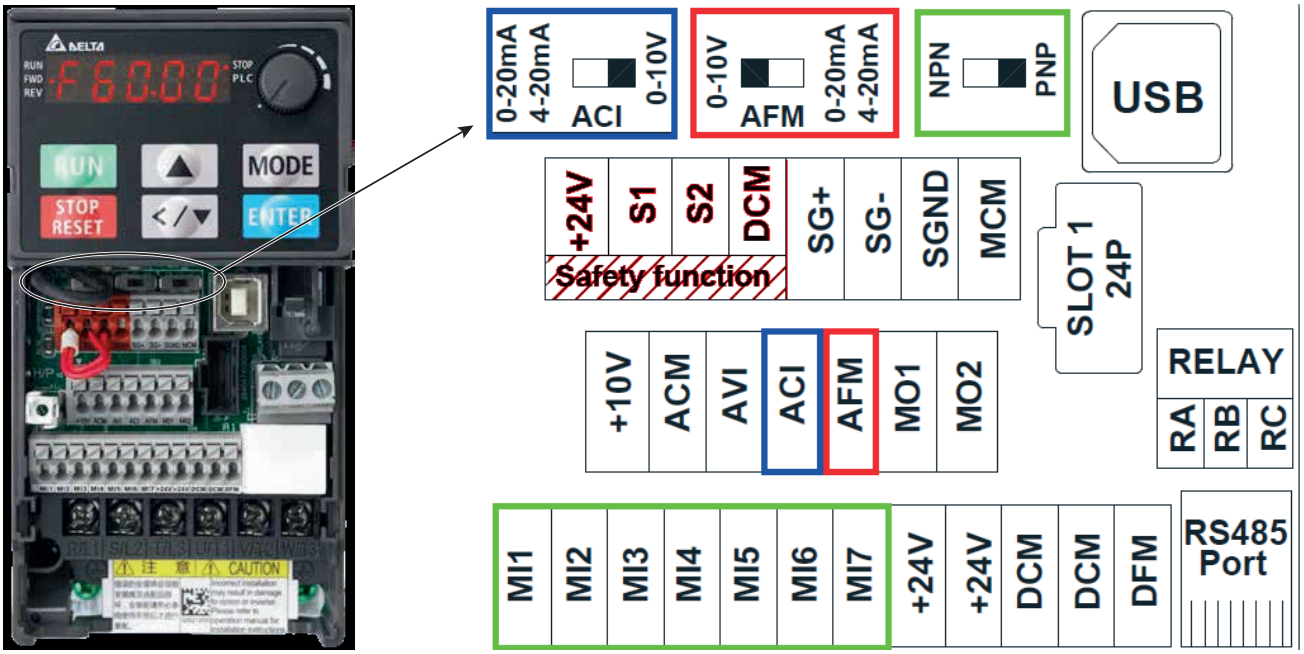
The automatic starting up of the **Linc Extractor SC** can be put under the control of any robotic, automated or other machines, by adding an external dry contact (contact closed = ON/contact open = OFF).

Just wire that dry contact through the cable gland provided on terminals **X12**/**X13** of the electrical cabinet.





6.1 Configuration of the internal microswitches of the variator



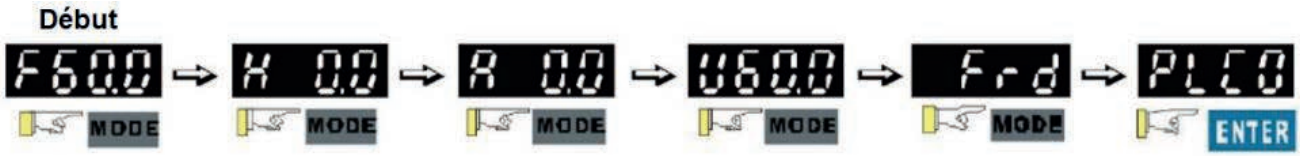
The switches for setting up the variator inputs and outputs must be set as follows:

- 0/10V for the switch of the analogue input **ACI**
- 0/10V for the switch of the output **AFM**
- Position **PNP** for setting up the inputs on the third switch

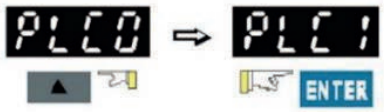
6.2 Programming the variator

In order to communicate with the HMI screen, the variator must be set up as follows:

☛ From the variator screen, press **MODE** several times till you reach the PLC setting. Once PLC is displayed on the screen, press **ENTER**



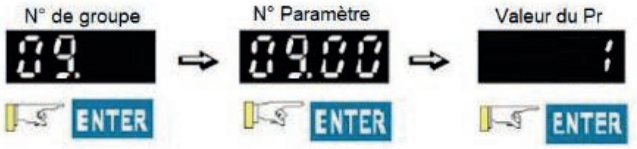
☛ Select **PLC1** with the up arrow and then **ENTER**



The variator is now set to **PLC1** (PLC RUN mode)

☛ Back on the home screen, press **MODE** several times once again till you reach the **FRD** setting and then press **ENTER**

☛ Using the up arrow,
- go to group 09, and click on **ENTER**,
- go to setting 09.00 and click on **ENTER**,
- enter the value 1 and click on **ENTER**.



☛ Do the same with setting **09.01** and enter the value **115.2**

☛ Do the same with setting **09.35** and enter the value **2**

Group	Setting	Value	Description
PLC1	**/**	**1**	Activation of PLC mode
09	**09.00**	**1**	COM1 communication address
09	**09.01**	**115.2**	COM1 transmission speed in Kbps
09	**09.35**	**2**	PLC address

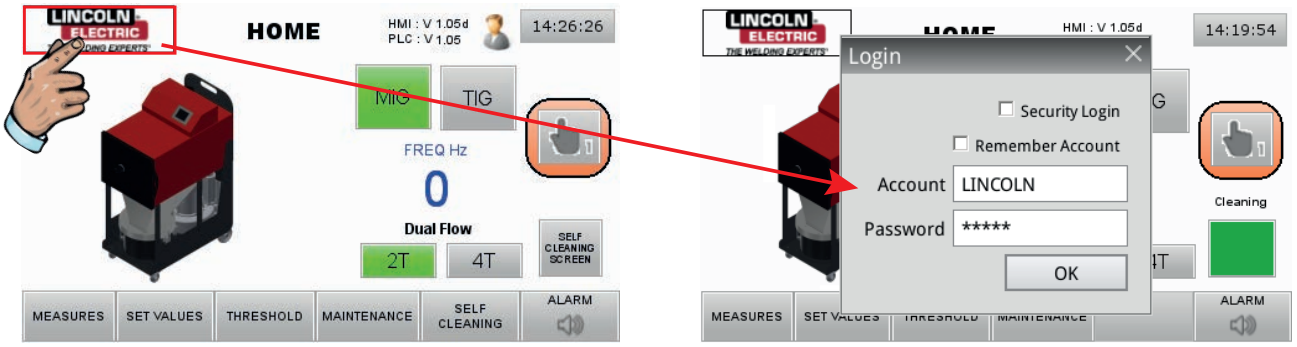
1 - Setting up the Linc Extractor SC

1.1 System setup menu

Access to the configuration settings of the **Linc Extractor SC** is locked and you must log in as a “Lincoln user” to access it.

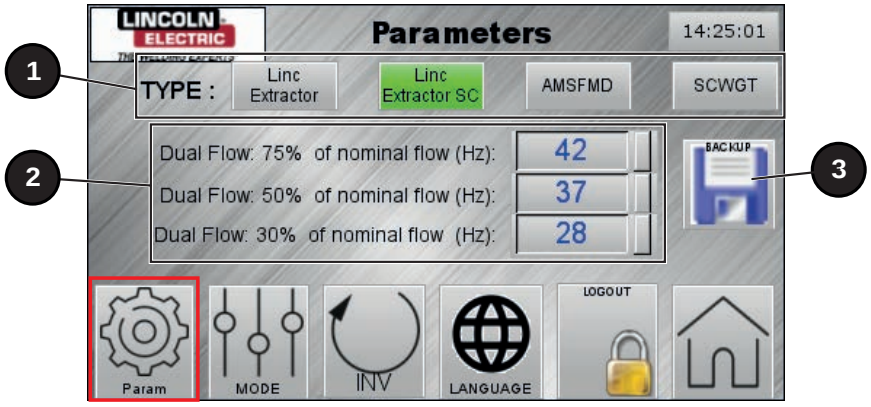
Press the Lincoln Electric logo and an identification request will open.
Enter the login and password and press on OK.

- Account: LINCOLN
- Password: MAINT



1.2 Settings

Once you have been identified, you can access the system settings pages menu.
The first page is the Settings page.



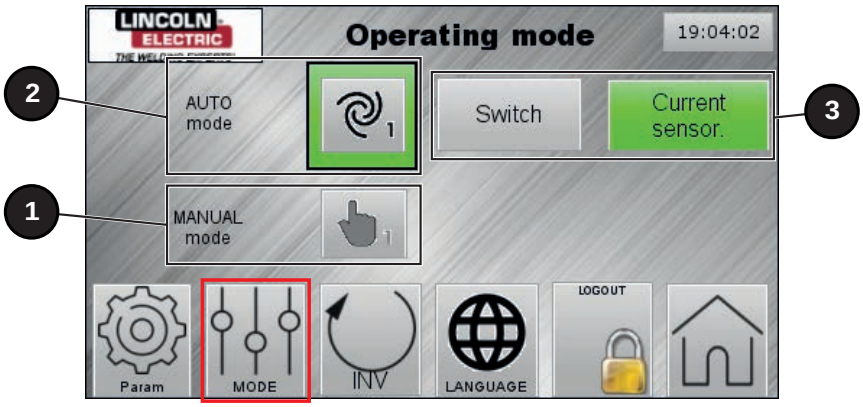
1	TYPE: Extraction unit configuration (setting locked in the factory)
2	Dual Flow mode operating frequency to be configured in order to be able to pre-select the second speed on the Setpoints page ☛ See paragraph: Dual Flow settings screen
3	Access to modes for saving or loading the configuration of the **Linc Extractor SC** ☛ See paragraph: Backup screen

1.3 Operating mode screen

The Mode page is used for selecting the principle for starting up extraction by the **Linc Extractor SC**.

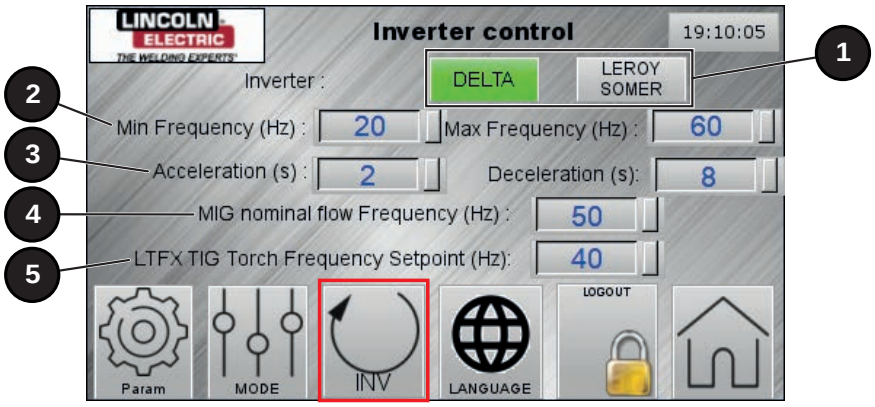
- Manual starting by pressing a button on the front of the home screen
- Automatic starting up as soon as the welding arc strikes, by a current sensor on the ground cable or an external normally-open dry contact.

If the extraction system is automated, a stopping delay may be programmed from the Threshold settings page



1	Manual mode
2	Automatic mode
3	Automatic mode by normally-open external contact or current sensor.

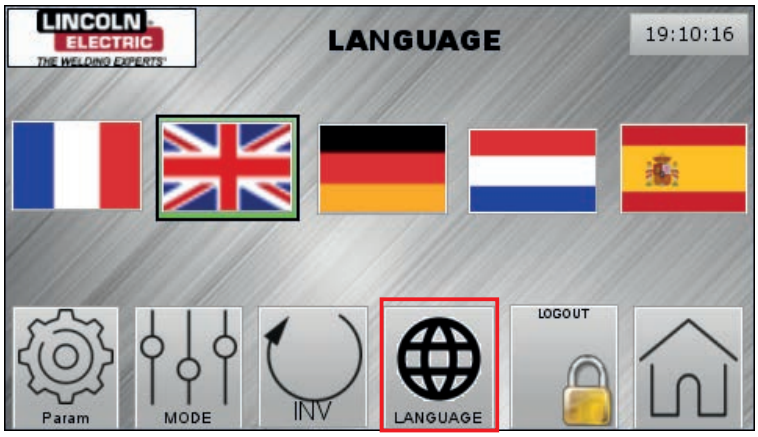
1.4 Variator screen



1	Type of variator (setting locked in the factory)
2	Min and max frequency adjustment range of variator (in Hertz) Min frequency = 20 Hz/Max frequency = 60 HZ (setting locked in the factory)
3	Turbine acceleration (2 sec) and deceleration (8 sec) setting (setting locked in the factory)
4	Nominal extraction frequency setting for MIG torches (factory setting: 50Hz)
5	Nominal extraction frequency setting for TIG torches (factory setting: 40Hz)

1.5 Languages screen

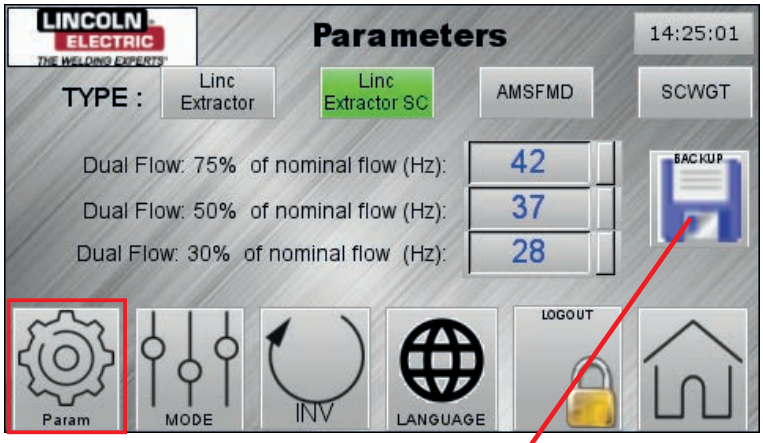
Choice of language depending on the country.

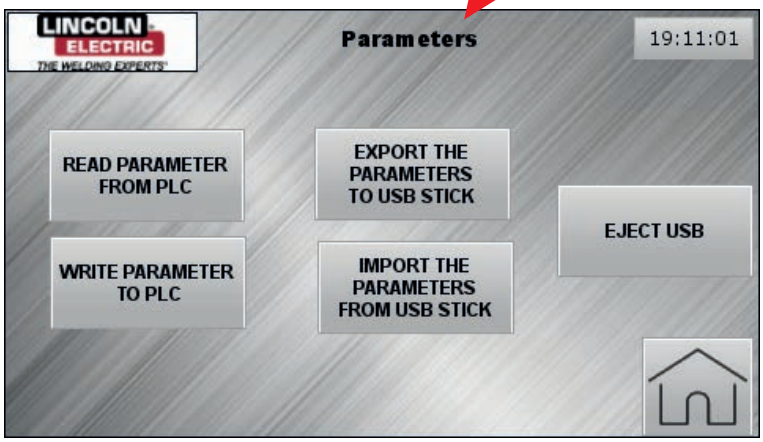


1.6 Backup screen

From the settings screen, you can:

- Copy the settings of the **Linc Extractor SC** and back them up to a USB drive
- Import backed up settings, a new configuration or an update from a USB drive, and load them to the **Linc Extractor SC**

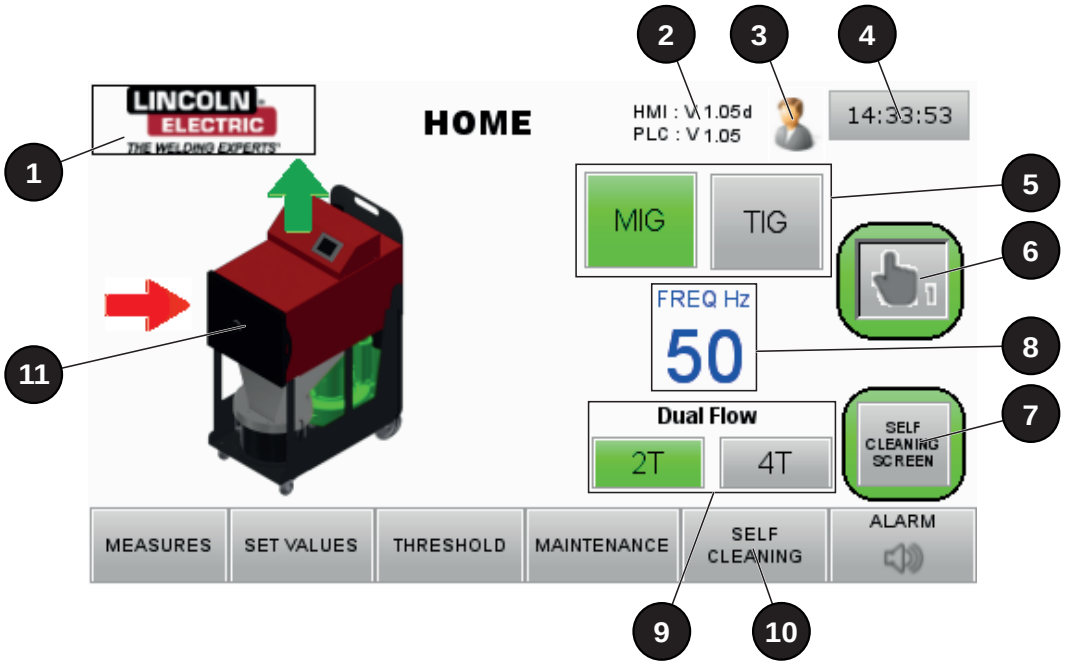




2.1 Home screen

The home screen is used for controlling and setting up the **Linc Extractor SC** depending on your needs:

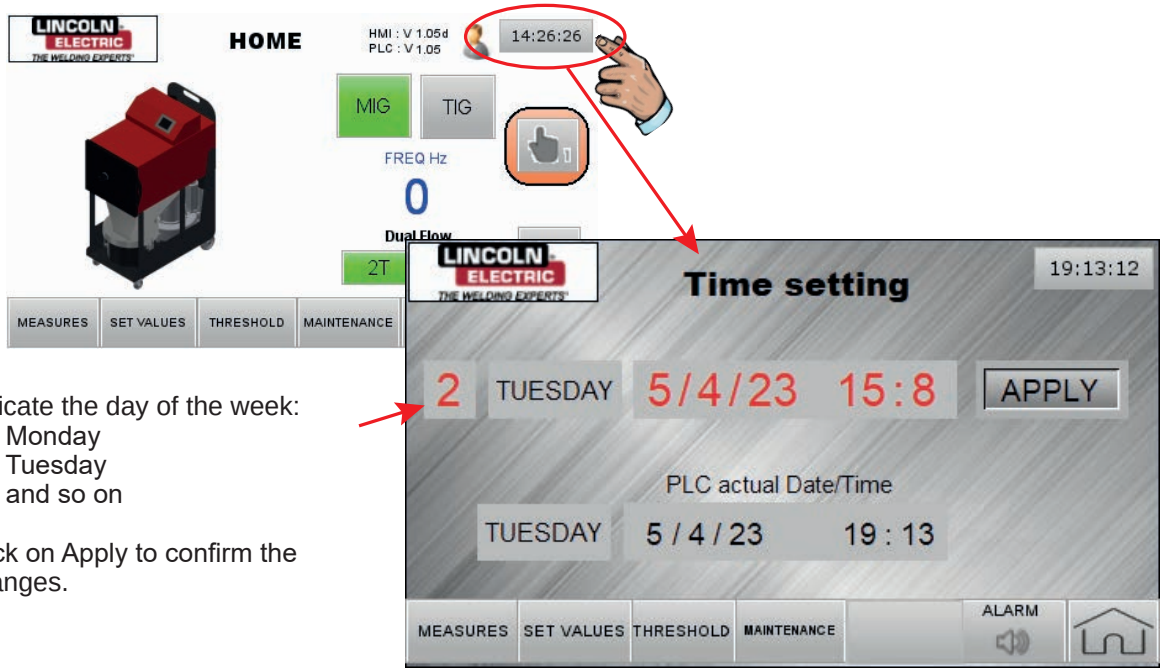
- Selecting the MIG or TIG fume extraction torch
- 2T or 4T mode for **Linc-Gun FX Dual Flow** MIG torch
- Manual starting of the high vacuum extraction turbine
- Starting an unclogging cycle
- Access to the different pages of the HMI screen.



1	Access to Settings
2	Program versions for HMI and PLC
3	Indicates if the operator is identified as a **Lincoln Electric** user or not. Login: LINCOLN/Password: MAINT
4	Date and time setting
5	Selection of MIG/TIG fume extraction torch
6	Operating mode: Manual (shown above)/Automatic
7	Unclogging indication/circled in green if active · Five unclogging pulses are started automatically at the end of each welding cycle · A manual press will start five unclogging pulses
8	Display of the extraction frequency of the turbine controlled to by the fume extraction torch · 50 Hz nominal for MIG fume extraction torch · 40 Hz nominal for TIG fume extraction torch
9	Dual Flow 2T or 4T mode selection for MIG Dual Flow fume extraction torches
10	Access to screens: Measurements/Settings/Thresholds/Maintenance/Alarms
11	Representation of the extraction unit in operation

2.2 Date and time screen

Once you have logged in as the user “Lincoln”, click on the time on the home screen to access the date and time setting screen.



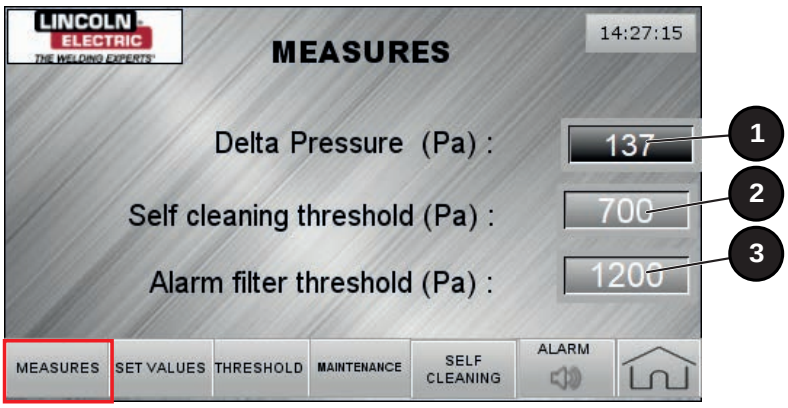
Indicate the day of the week:
1 = Monday
2 = Tuesday
3 = and so on

Click on Apply to confirm the changes.

2.3 Measurements screen

The measurement screen shows the pressure difference between the extraction box and the turbine in real time, or the fouling status of the filter cartridge.

An alarm preset to 800Pa indicates that the cartridge or pre-filter is saturated with dust and must either be regenerated with unclogging cycles away from extraction or replaced.

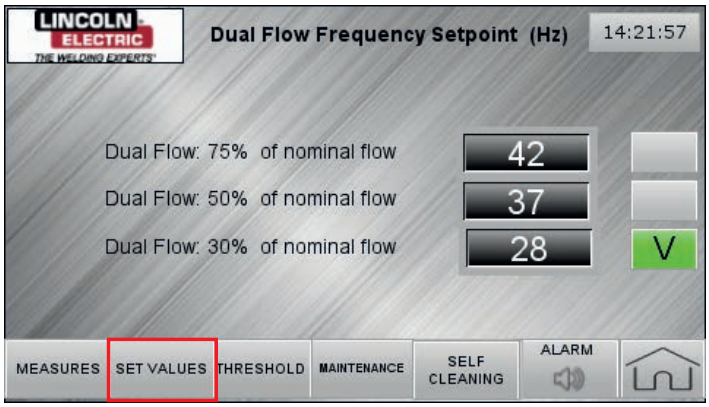


1	Filter cartridge fouling status in Pascal
2	Online unclogging threshold of filter cartridge (factory value 700Pa)
3	Filter cartridge fouling alarm in Pascal (factory value 1200Pa)

2.4 Dual Flow settings screen

The Dual Flow torch frequency settings screen is only active when the **Linc Extractor SC** is set up for MIG torches.

This is the page on which you will need to select the second extraction speed(1) dedicated to the Dual Flow mode. The first speed is the nominal speed of 50Hz by default.

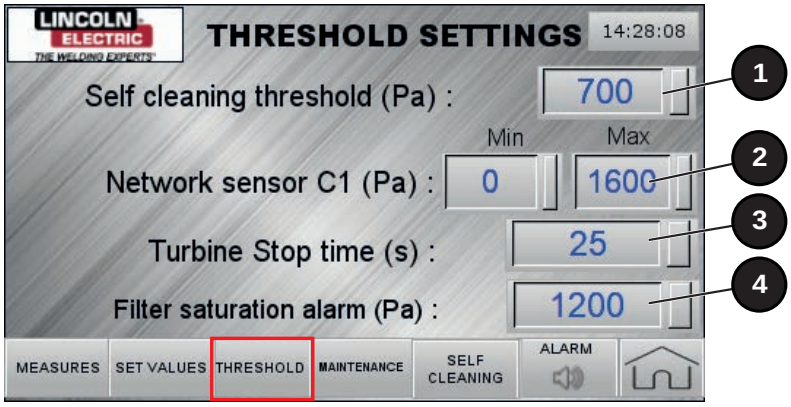


(1): the nominal extraction speed and the second speed dedicated to the Dual Flow mode are preset in the factory. These can however be changed from the Settings and Variator pages of the system configuration menu.

2.5 Thresholds screen

The thresholds adjustment screen is used for setting the delay after welding for stopping the turbine.
That delay is only active in Automatic mode and allows the extraction of residual fumes after welding work is completed.

The System sensor threshold is factory set.
The Cartridge saturation alarm threshold is configurable with the Lincoln user login.

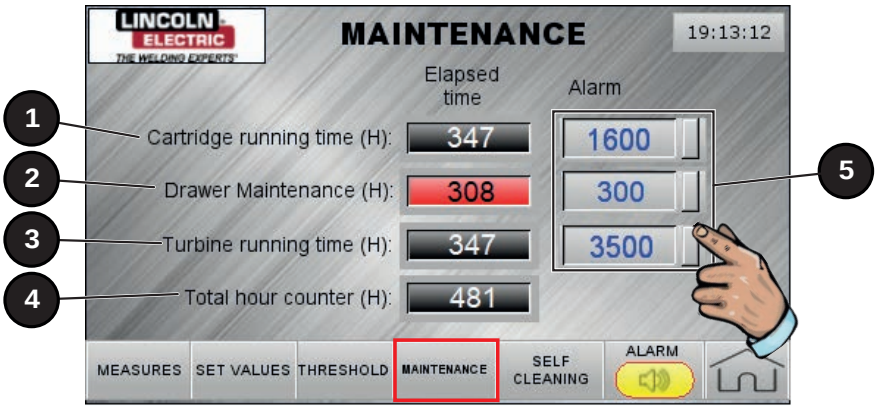


1	Online unclogging threshold ☛ factory setting (login “Lincoln user”) – 700Pa
2	Measurement range of vacuum sensor ☛ factory setting (Administrator login) - 0/1600Pa
3	Turbine stopping delay ☛ active in Automatic mode (“Lincoln user” login) - 25s
4	Cartridge saturation alarm threshold setting ☛ factory setting (“Lincoln user” login) - 1200Pa

2.6 Maintenance screen

The maintenance screen shows the run times of the different parts of the extraction unit, and a counter indicating the next maintenance operation.

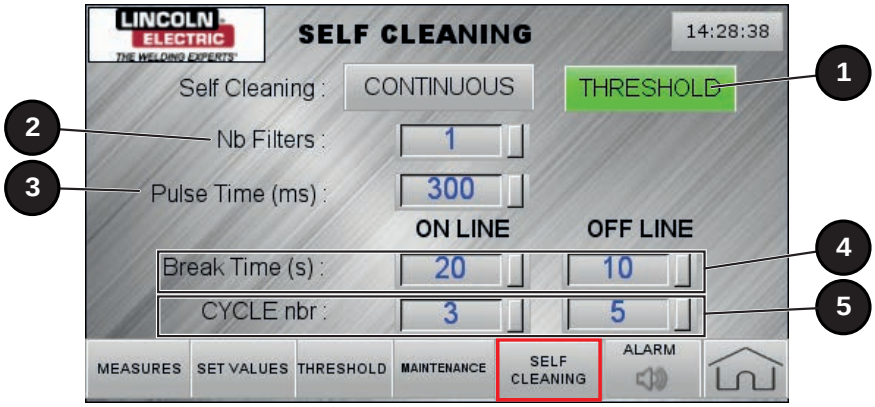
Once a counter value is reached, a warning message is displayed on the home screen of the **Linc Extractor SC** to show that maintenance will be needed soon.



To reset the counter for a new cycle, log in as a Lincoln user by clicking on the active counter and then reset it by clicking on Reset.

1	Filter cartridge run time in hours/number of hours before maintenance alarm
2	Dust container run time in hours/number of hours before maintenance alarm
3	Extraction turbine run time in hours/number of hours before maintenance alarm
4	**Linc Extractor SC** extraction unit run time in hours.
5	Click on the counter to reset and log in as Lincoln user Login: LINCOLN/Password: MAINT
6	Once logged in, the Reset button becomes accessible and is used for resetting, after maintenance is complete.

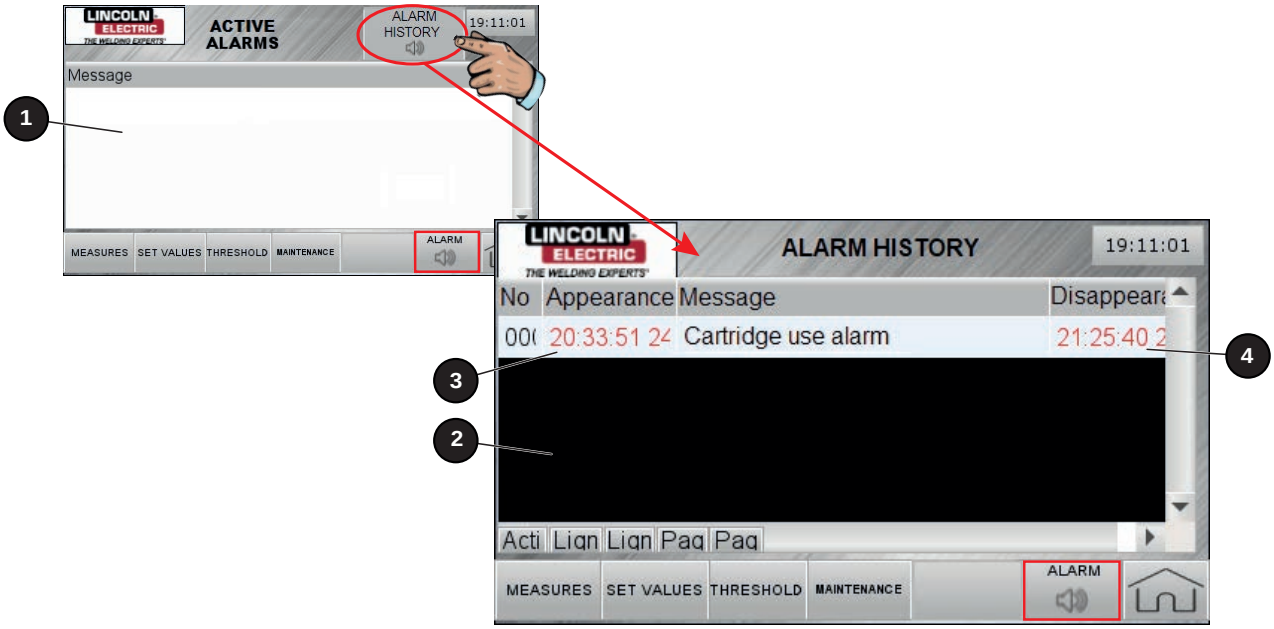
2.7 Unclogging screen



1	Choice of type of unclogging: · Permanent; according to the configuration of online cycles · Threshold based: once the unclogging threshold is reached
2	Number of cartridges; 1
3	Unclogging pulse time (in milliseconds)
4	Pause time between online/offline unclogging (in seconds)
5	Number of unclogging cycles

2.8 Alarms screen

In the Alarms page, you will only find alarms that are active in real time.
Once the alarms have been acknowledged, they are logged on the Alarms history page.



1	Alarms page
2	Alarms history page
3	Alarm occurrence time
4	Alarm acknowledgement time

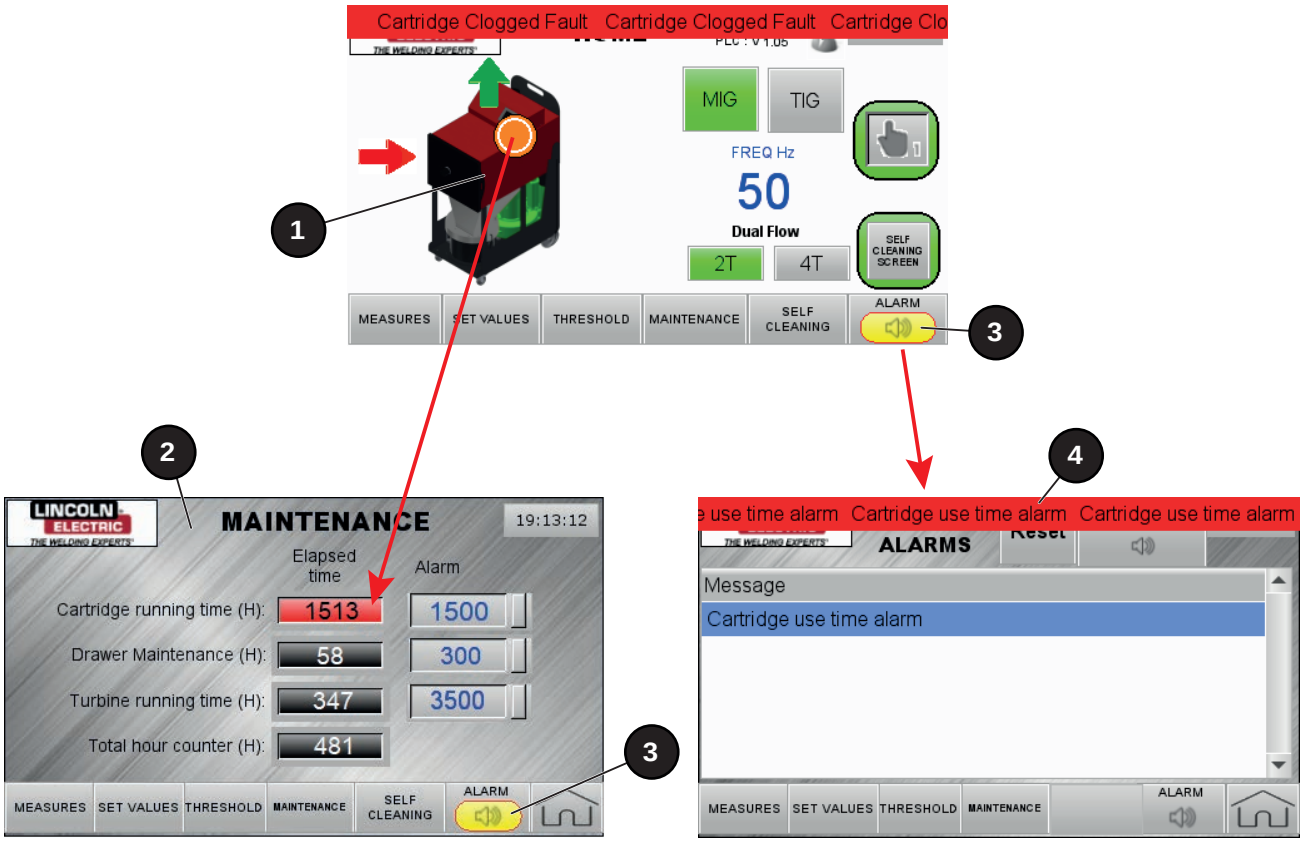
List of possible alarms:

Possible alarms	Possible remedies
C1 sensor fault	Measured values out of range
HMI or PLC battery fault	Change the PLC or HMI battery
Communication fault	Check com connection between PLC and HMI
Filter saturation alarm	Unclog or change the filter cartridge
Turbine run time alarm	Carry out overall maintenance and reset the counter
Cartridge run time alarm	Change the filter cartridge and reset the counter
Dust container maintenance	Empty the dust container and reset the counter
Turbine fault alarm	Turbine failure/variator failure: Note the fault displayed on the variator for more details

2.9 Alarm management

When an alarm is active, there are two possibilities:

- Either click on the orange indicator (maintenance alarm) or red indicator (fault alarm) to open the associated message
- Or click on the Alarms page to view the active alarm or alarms.



1	Orange indicator representing the active alarm
2	Page corresponding to the orange indicator after clicking on it
3	Active alarm indicator and access to Alarms page
4	Active alarms page

1 - Routine maintenance

Please read the manually carefully before you start any servicing work. Maintenance operations may only be carried out by specialised and qualified individuals. Behaviour that does not comply with the safety instructions provided could lead to major hazards for personnel and damage to property and/or the surroundings.

Before working on the machine, it is **MANDATORY** to lock out all the supplies of utilities to the machine (electricity, air, gas etc.). The air circuit must be vented before any work is done on it Locking an emergency stop button is not sufficient.

CAUTION: All work at heights (maintenance, troubleshooting etc.) must be carried out with appropriate personnel lifting equipment.

For operating instructions, adjustments, troubleshooting and spare parts, please refer to the special instructions for safe operating and maintenance.

Before starting up the machine, make sure that the replaced parts are perfectly installed and that the tools used are removed from the machine.
Make sure that each safety device is in good condition and legible.

MAINTENANCE OF MECHANICAL PARTS
The machine requires negligible mechanical maintenance if it is used correctly in accordance with its technical characteristics.
Before any type of maintenance that is not clearly defined in these instructions, please make inquiries with the technical department of **Lincoln Electric**.
The performance of operations that may not be carried out or are contrary to the standards and procedures described in the manual would release **Lincoln Electric** from liability for any damage caused and would void the guarantee if it is still valid.

1.1 Maintenance of mechanical parts

The machine requires negligible mechanical maintenance if it is used correctly in accordance with its technical characteristics.

Before any type of maintenance that is not clearly defined in these instructions, please make inquiries with the technical department of **Lincoln Electric**.

1.2 Pneumatic maintenance

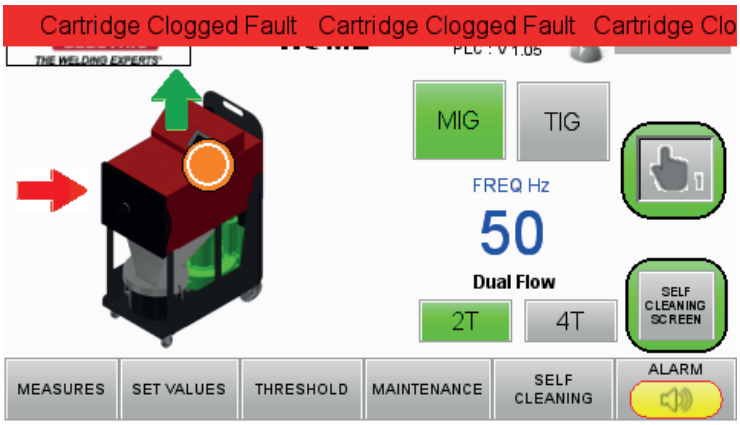
The regulator and pressure gauge must be inspected from time to time.
The air supply pipes must be inspected (for leaks) and changed if necessary.
Refer to the maintenance counter or cartridge change counter, which is 1600 hours.

1.3 Electrical maintenance

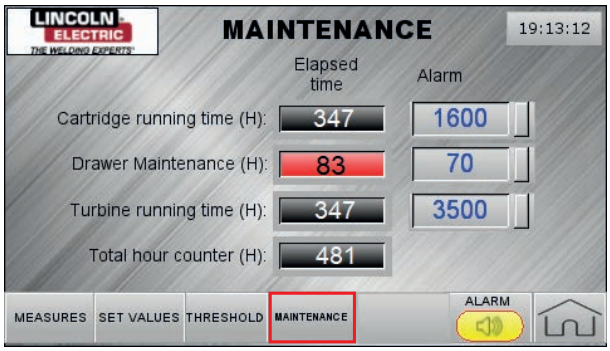
Regularly check the cables and connections.
Tighten the screw connections.
Worn cables must be replaced.
Refer to the maintenance counter of the extraction unit, which is 3500 hours.

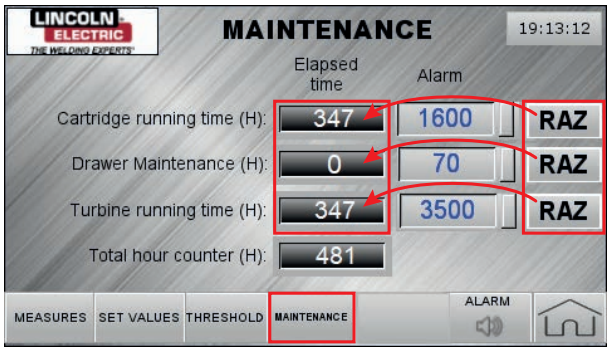
1.4 Maintenance message on the HMI screen

The display of a yellow indicator on filter cartridges or dust containers does not indicate faults, only maintenance alarms.
These may relate to filter cartridge changes, the removal of dust in the dust container, turbine maintenance or general maintenance of the extraction unit.



These maintenance alarms indicate that the run time counter of the relevant part has reached the limit and maintenance is required; the counter must then be reset up to the next cycle.





To reset the counter, you must click on the counter and then log in:

- Login: LINCOLN
- Password: MAINT

1.5 HMI screen and PLC software update

For different reasons relating to maintenance, product upgrade or failure, the programs of the PLC and HMI screen can be updated.

Please contact the staff of **Lincoln Electric** for these tasks.

2 - Maintenance of filtering elements

2.1 Maintenance of metal pre-filter

The pre-filter must be cleaned with the extraction system disconnected and locked out.

Initially, we recommend weekly cleaning. Depending on use and soiling, monthly cleaning may be considered.

- Access to the metal pre-filter is from the front panel.
- Clean the metal pre-filter with compressed air in a very well ventilated room or by immersion in a solution of water + Filter Clean 20L part no. W000342878 and air dry (dilution depending on fouling, see label on drum).
- Reset the filter cartridge maintenance counter.

2.2 Maintenance / Replacing the filter cartridge

To replace the filter cartridges, always use gloves, safety glasses, respiratory mask and appropriate clothing to prevent the risk
of contact with or inhalation of the collected particles. The power supply must always be switched off using the disconnector and locked out.

We recommend checking the surface condition of the cartridges every 3 months :

- Excessive dust accumulation should lead to a check on the correct operation of the solenoid valves and compliance with OFFLINE cleaning cycles.
- Oily deposits should prompt replacement of the filter cartridges.

After every 1600 hours as indicated by the filter cartridge maintenance counter, or as soon as extraction appears inadequate; change the filter cartridge

- Open the front panel and remove the metal pre-filter.
- Unscrew the flat nut that holds the cartridge.
- Place a plastic bag around the cartridge and remove it.
- Put the clogged cartridge in the packaging of the new cartridge.
- Put in the new cartridge, screw back the flat nut, put back the metal pre-filter and shut the panel.
- Reset the filter cartridge maintenance counter.

Used filters must be treated using an appropriate process in accordance with local regulations.

2.3 Removal of welding dust

While emptying the dust container, use gloves, protective glasses, a respiratory mask and appropriate clothing in order to avoid any risk of contact with or inhalation of the particles collected. The power supply must always be switched off using the disconnector and locked out.

As indicated by the dust container maintenance counter.

- Start a manual unclogging cycle to remove the remaining dust from the filter cartridge.
- Stop and then power down the **Linc Extractor SC** to avoid offline unclogging.
- Undo the two latches, extract the container, keeping it flat.
- Welding dust must be recycled, and the dust from the containers must be transferred to a bag and stored in an appropriate location for reprocessing according to local requirements.
- Power up the **Linc Extractor SC** once again, then rest the dust container maintenance counter.

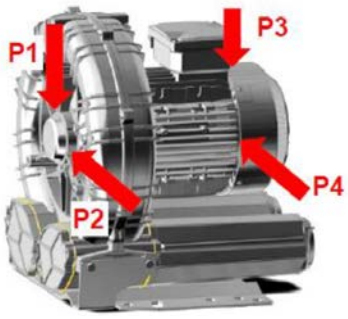
Dust bags must be treated using an appropriate process in accordance with local regulations.

3 - Extraction turbine maintenance

The rotating parts of fans (wheel, shaft, pulley) are very hazardous.

After every 3500 hours as indicated by the turbine maintenance counter (work by an authorised technician)

- Check turbine vibration while starting up. They must comply with ISO 14694 according to the tables below. If they are not conforming, please contact us. Such regular inspection is required to protect the integrity of the turbine
- Reset the dust container maintenance counter.



3.1 Vibration measurement

To determine the vibration speed (mm/s), use an electronic vibration meter and apply it to the following points:
Points P1 and P2 (front bearing): Place the vibration meter close to the front bearing and log the highest value.
Points P3 and P4 (rear bearing): Place the vibration meter on the frame of the electric motor, near the bearing housing (not on the fan guard) and log the highest value.

Key: Machine classification: Class I = SCL with electric motor, power rating ≤15 kW Class II = SCL with electric motor, power rating > 15 kW Assessment zones: Zone A = vibrations (a) inside this zone are acceptable for long-term operation. Zone B = vibrations (a) inside this zone are acceptable for continuous short-term operation. The machine may operate in these conditions for a limited period, till an opportunity for appropriate corrective maintenance work arises.	Effective vibration speed value (mm/s)	Class I (≤15 kW)
	a < 1.8	A
	1.8 < a < 4.5	B

Vibration values above zone B may not be considered to be acceptable as they could damage the machine seriously.

Deposits inside the turbine could lead to
- variations in its operating characteristics,
- and cancelling of clearance, therefore seizing,
- rotor unbalance.

3.2 Cleaning the inside

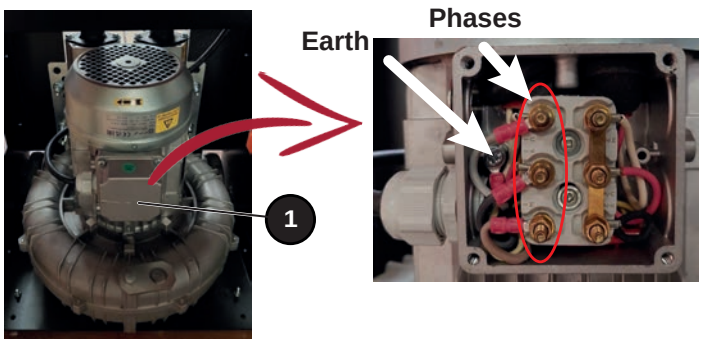
Any work on the **Linc Extractor SC** must **NECESSARILY** be carried out after it has been isolated from all utility supplies. The disconnection and padlocking of the electricity supply is mandatory.

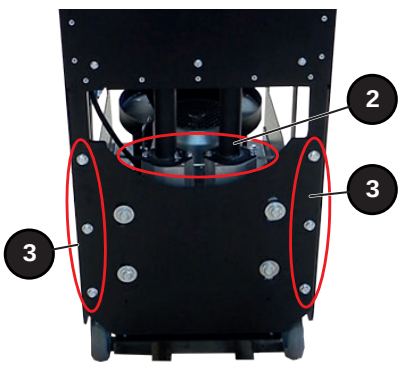
To clean the inside of the turbine, proceed as follows:

1 - Separating the turbine from the Linc Extractor SC.

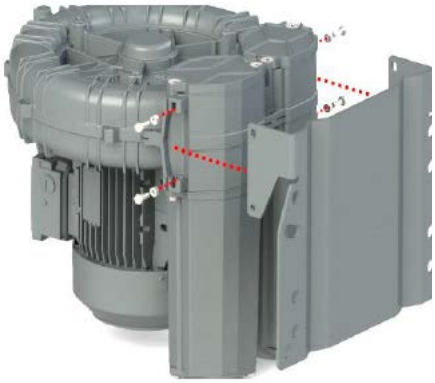
- 1 - Disconnect the electricity supply from the turbine terminal plate - three phases and earth - and then extract them from the gland.
- 2 - Take off the intake and exhaust pipes.
- 3 - Unscrew the turbine from the frame

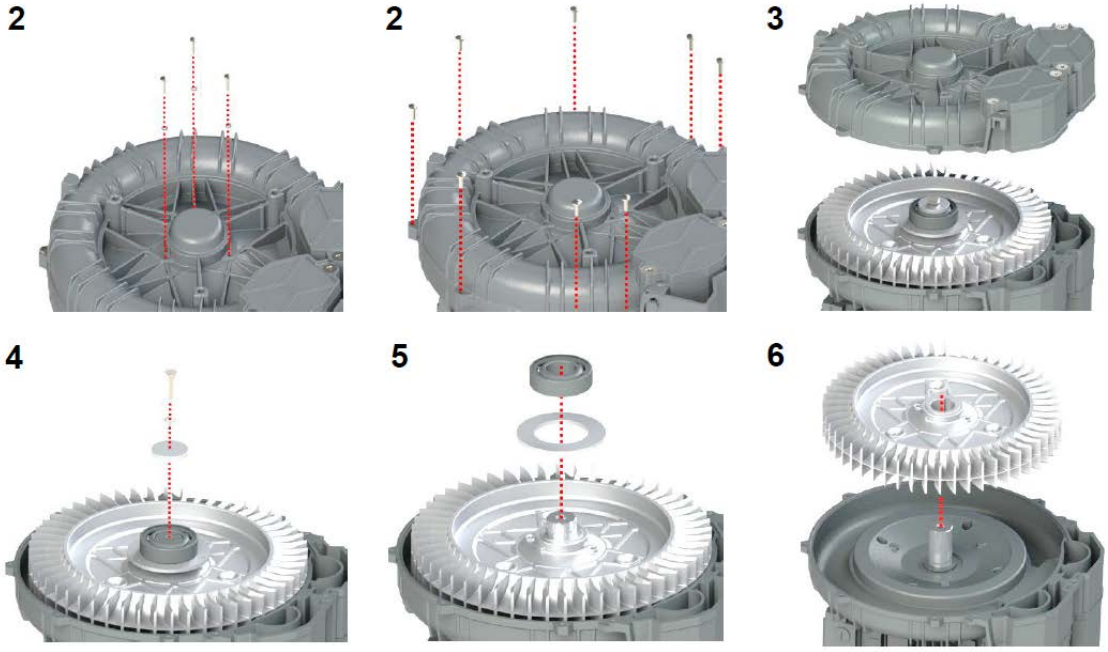
Weight of turbine: 37 kg





- Set the machine vertical by placing the fan on a flat and stable surface (1).
- Loosen the screws 920 and remove the stand 183 (1).
- Loosen the screws of the cover (3 Philips head and 9 Allen screws (2)).
- Lever up the two grooves located between the body 161 and the cover 162 (3) to remove the cover.
- Loosen the screws 900 and remove the washer 365 (4).
- Remove the bearing 321 and the cover 360 of the bearing using an extractor (5).
- Remove the impeller 230 (6).
- Clean and reassemble, in reverse order of assembly.
- Make up the seal 423 with Loctite 598 or the like after carefully cleaning the surfaces of the previous seal





Life of bearings:

In normal operating conditions, the machine bearings must be replaced after every 25000 hours or every 3 years.

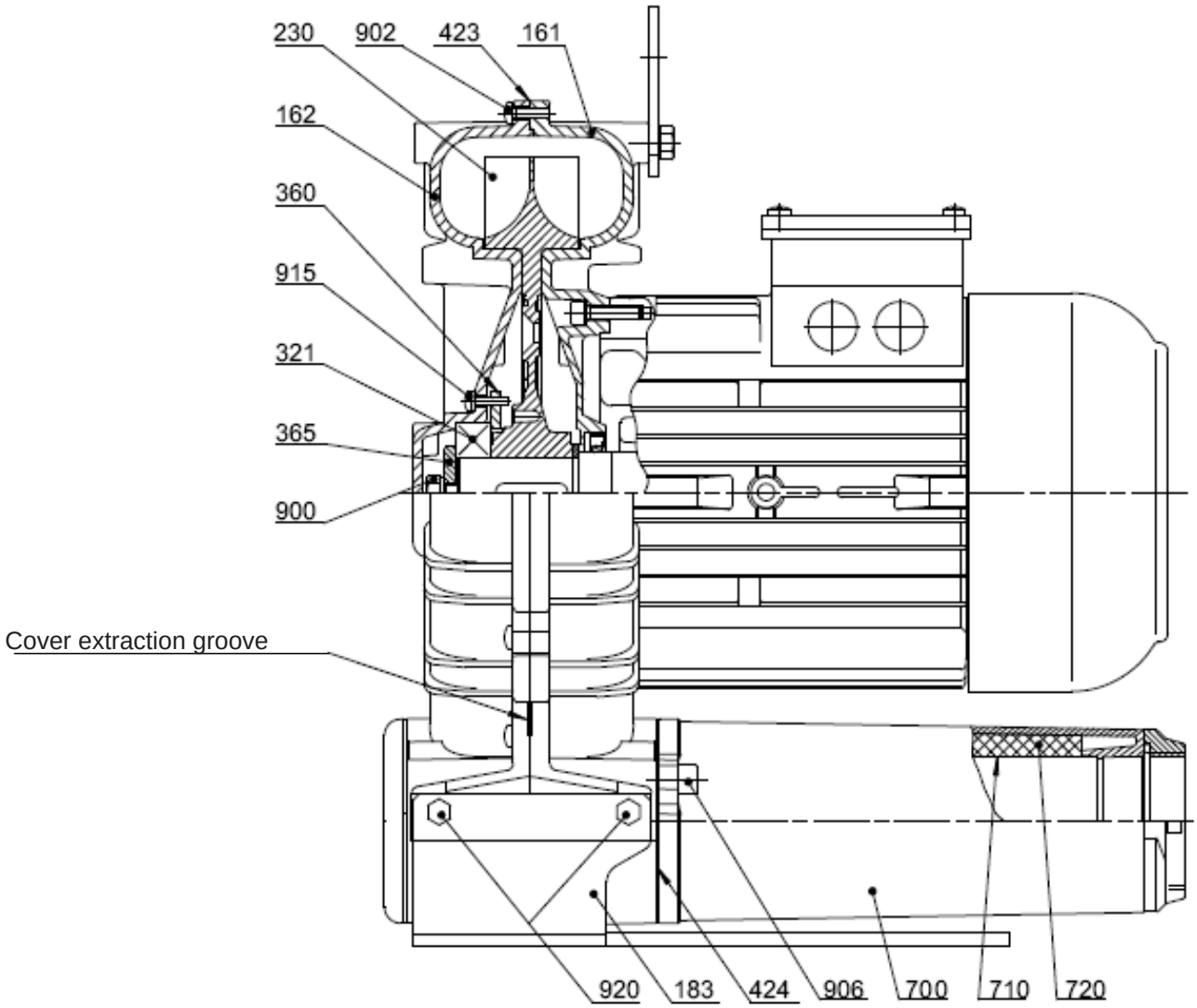
3.3 Replacing the sound-proofing panels

- Loosen the screws 906 (1)
- Remove the unit silencer 700.
- Take care to not misplace the seals 424.
- Extract the foam 720 from the body of the silencer (2)
- Collect the meshes 710.
- Replace and put back, in reverse order, and remember the seals 424.

3.4 Motor cooling

Clean the motor cooling impeller blades (after every 6 months).

NB: This unit does not require lubrication.

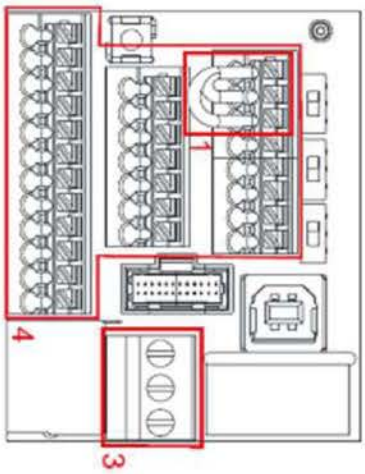


Problem	Cause	Solution
The unit does not start	The electrical wiring is not correct.	Make sure that the electrical connections match the diagram indicated in the terminal box.
	The power supply voltage is not suitable.	Make sure that the power supply voltage measured at the motor terminals is equal to +/-5% of the nominal voltage.
	The impeller is blocked.	Cause the machine to be repaired by qualified personnel.
No or inadequate air flow	The rotation direction is incorrect.	Make sure that the rotation direction is as indicated on the casing protecting the motor fan.
	The extraction filter is clogged.	Clean or replace the cartridge.
Current consumption above the acceptable value	Wiring not correct.	Make sure that the electrical connections match the diagram indicated in the terminal box.
	Power supply voltage drop.	Restore the power supply voltage of the terminals with the acceptable values.
	The extraction filter is clogged.	Clean or replace the cartridge.
	Deposits have built up inside the unit.	Cause the inside of the machine to be cleaned by qualified personnel.
	The unit is operating with pressure and/or vacuum above the acceptable value.	Adjust the installation and/or the adjustment valve to reduce the pressure differences.
Discharge air temperature high	The unit is operating with pressure and/or vacuum above the acceptable value.	Adjust the installation and/or the adjustment valve to reduce the pressure differences.
	The extraction filter is clogged.	Clean or replace the cartridge.
	Deposits have built up inside the unit.	Cause the inside of the machine to be cleaned by qualified personnel.
	The extraction and/or discharge pipes are blocked.	Remove the obstructions.
	Temperature of extracted air above 40°C	Use heat exchangers to reduce the temperature of the extracted air.
Abnormal noise	The soundproofing panel is damaged.	Replace the soundproofing panel.
	The turbine is rubbing against the frame a) The unit is operating with pressure and/or above the acceptable value b) Reduction of assembly clearances due to internal deposits (dust, impurities on tubes, process residues etc.)	Adjust the installation to reduce the pressure differences. Cause the inside of the machine to be cleaned by qualified personnel.
	Bearing worn.	Replace the bearing.
	The unit is not installed in a suitable position.	Install the units on structures that cannot transmit or amplify noise (tanks, metal plates etc.).

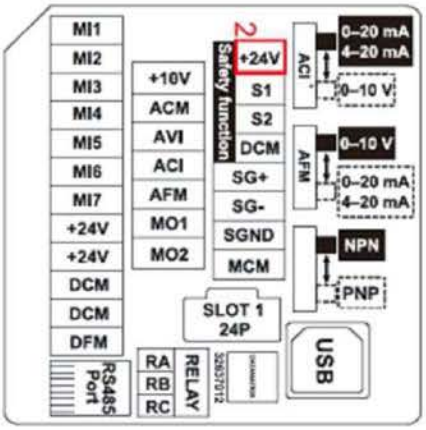
Abnormal vibrations	The impeller is damaged.	Replace the impeller.
	Deposit has built up inside the impeller.	Cause the inside of the machine to be cleaned by qualified personnel.
	The unit is not fastened correctly.	Fasten the unit with anti-vibration systems.

IMPLANTATION BORNIER V.F DELTA MS300

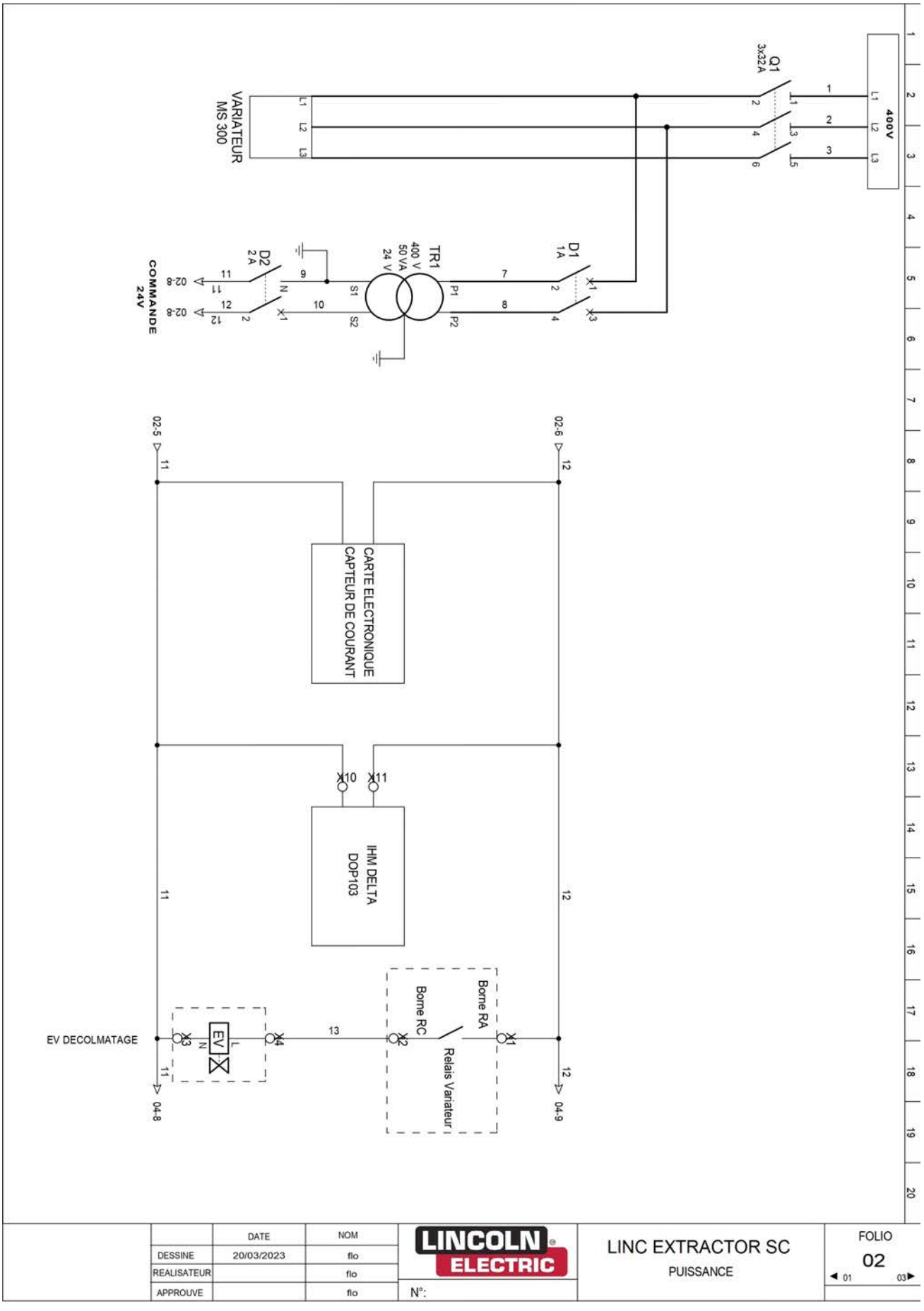
Control Terminal Distribution Diagram



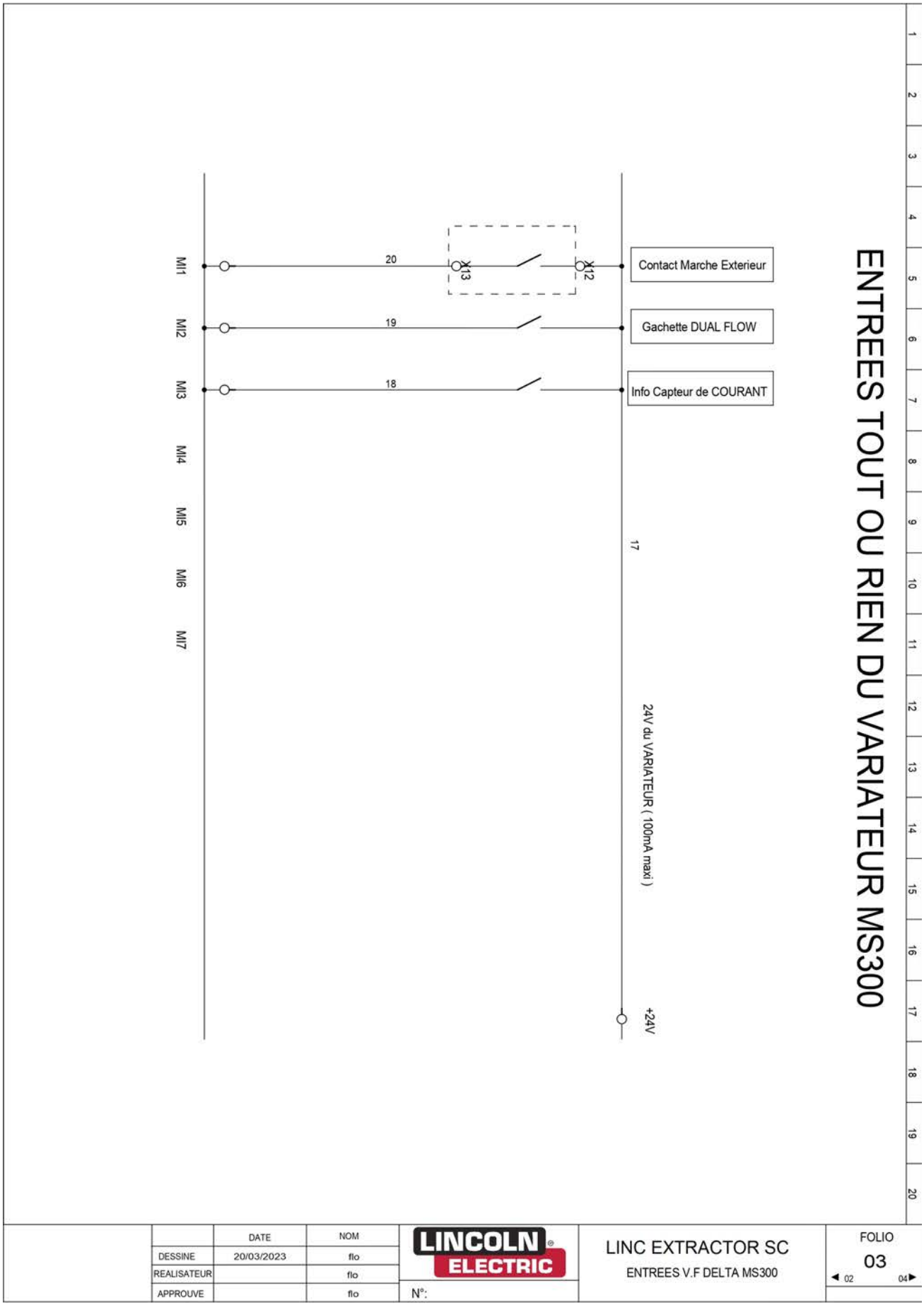
Control Terminal Location Diagram



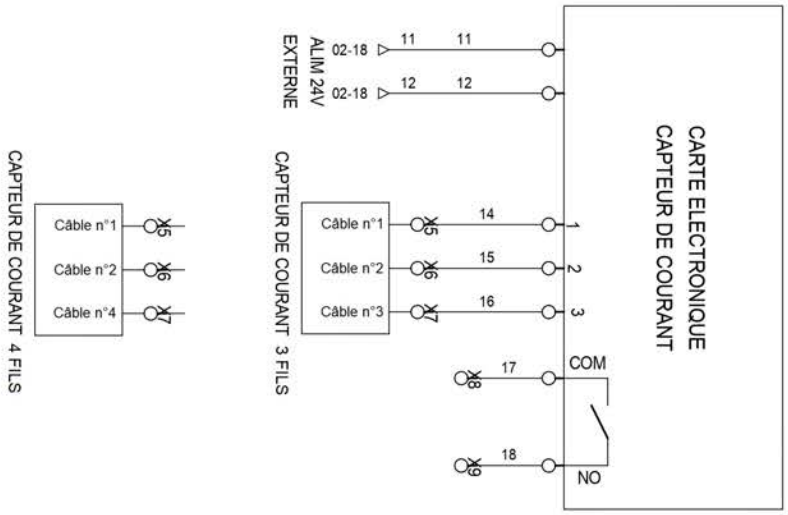
		DATE	NOM			
	DESSINE	20/03/2023	c.a.	LINCOLN ELECTRIC	LINC EXTRACTOR SC	FOLIO 01
	REALISATEUR				IMPLANTATION BORNIER V.F DELTA MS300	◄ 01 02►
	APPROUVE		c.a.	N°:		



	DATE	NOM			
DESSINE	20/03/2023	flo	LINCOLN ELECTRIC	LINC EXTRACTOR SC	FOLIO 02
REALISATEUR		flo		PUISSANCE	◄ 01 03►
APPROUVE		flo	N°:		


ENTREES TOUT OU RIEN DU VARIATEUR MS300
MI1
MI2
MI3
MI4
MI5
MI6
MI7
20
19
18
17
X13
X12
Contact Marche Exterieur
Gachette DUAL FLOW
Info Capteur de COURANT
24V du VARIATEUR (100mA maxi)
+24V
DATE
NOM
DESSINE
20/03/2023
flo
REALISATEUR
flo
APPROUVE
flo
N°:
LINC EXTRACTOR SC
ENTREES V.F DELTA MS300
FOLIO
03
◄ 02
04►

CARTE ELECTRONIQUE CAPTEUR DE COURANT



	DATE	NOM
DESSINE	20/03/2023	flo
REALISATEUR		flo
APPROUVE		flo

LINCOLN ELECTRIC

N°:

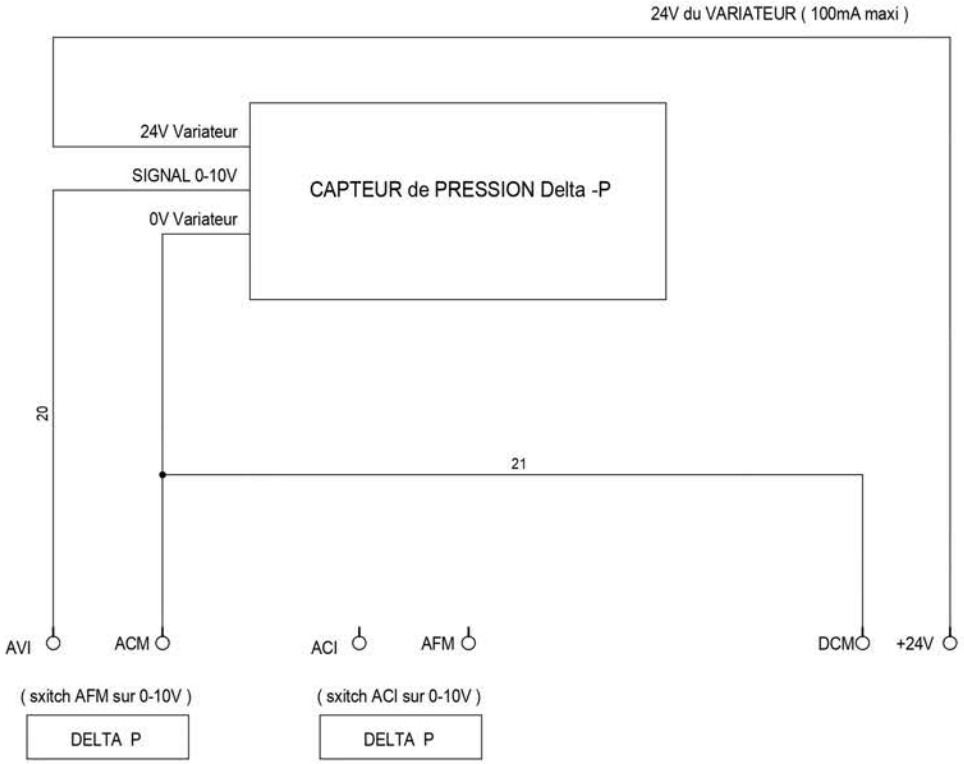
LINC EXTRACTOR SC

CARTE ELECTRONIQUE CAPTEUR DE COURANT

FOLIO 04

◀ 03 05 ▶

ENTREES ANALOGIQUES DU VARIATEUR DELTA MS300



FOLIO 05

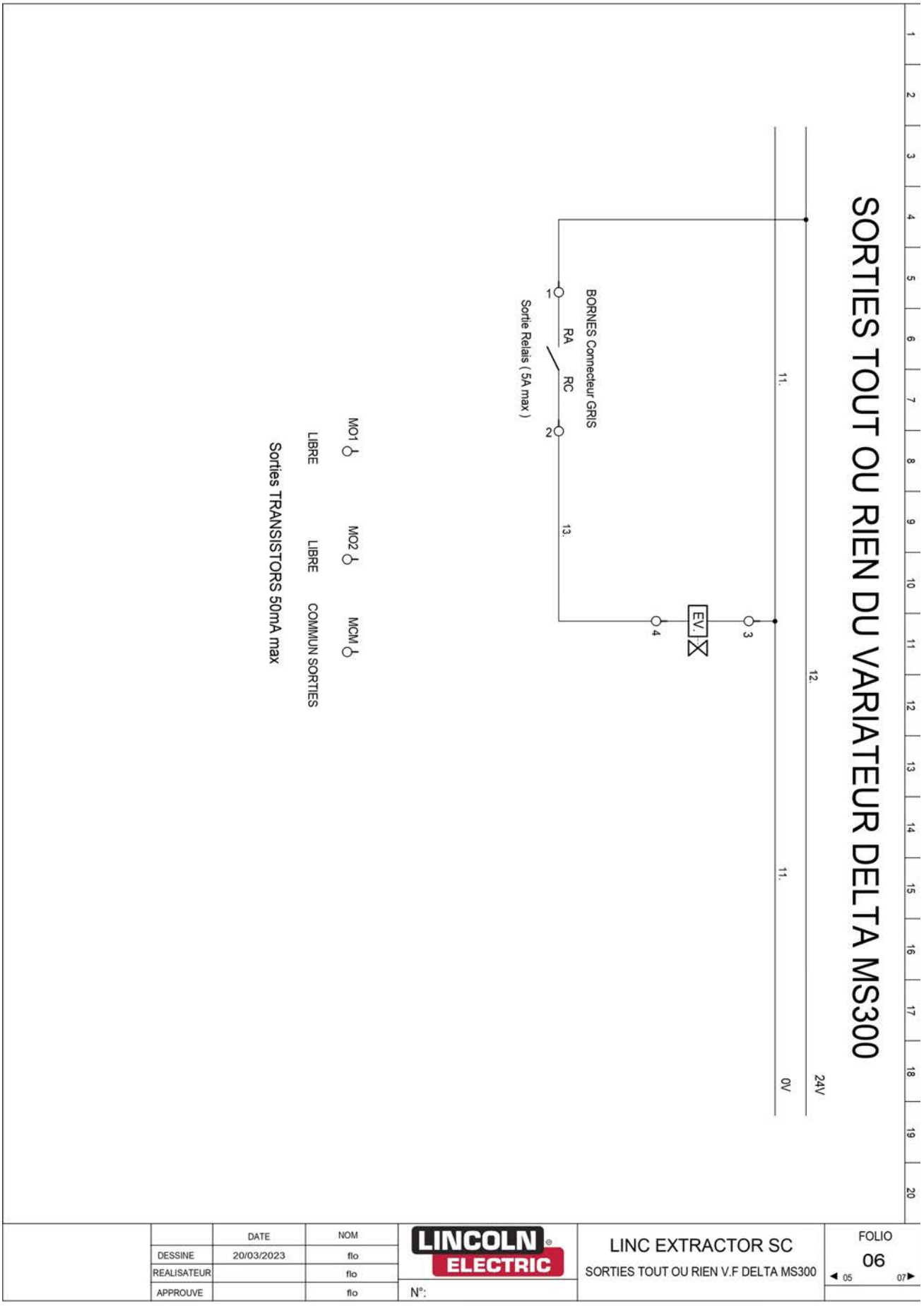
LINC EXTRACTOR SC

ENTREES ANALOGIQUES V.F DELTA MS300

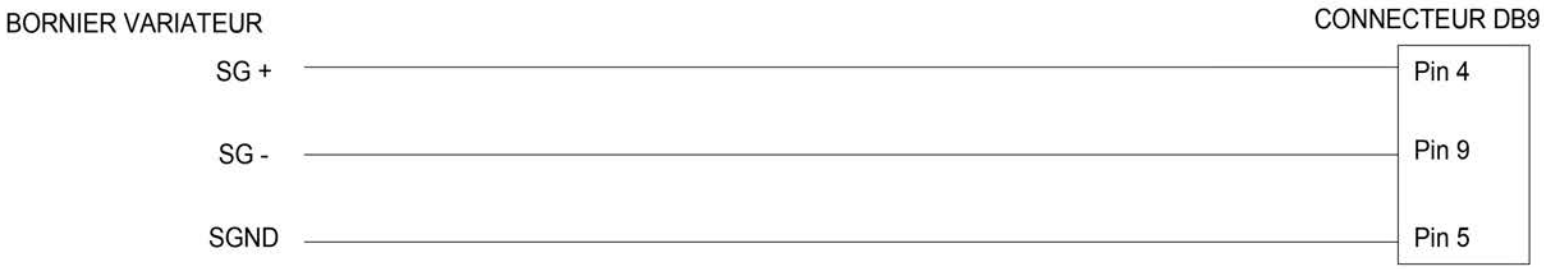
LINCOLN ELECTRIC

N°:

	NOM	DATE
DESSINE	flo	20/03/2023
REALISATEUR	flo	
APPROUVE	flo	


SORTIES TOUT OU RIEN DU VARIATEUR DELTA MS300
24V
0V
12.
11.
11.
13.
EV.
3
4
BORNES Connecteur GRIS
1
RA
RC
2
Sortie Relais (5A max)
MO1
MO2
MCM
LIBRE
LIBRE
COMMUN SORTIES
Sorties TRANSISTORS 50mA max
DATE
NOM
DESSINE
20/03/2023
flo
REALISATEUR
flo
APPROUVE
flo
N°:
LINCOLN ELECTRIC
LINC EXTRACTOR SC
SORTIES TOUT OU RIEN V.F DELTA MS300
FOLIO
06
05
07

CORDON DE LIAISON VARIATEUR Ecran IHM DELTA MS300



	NOM	DATE
DESSINE	flo	20/03/2023
REALISATEUR	flo	
APPROUVE	flo	

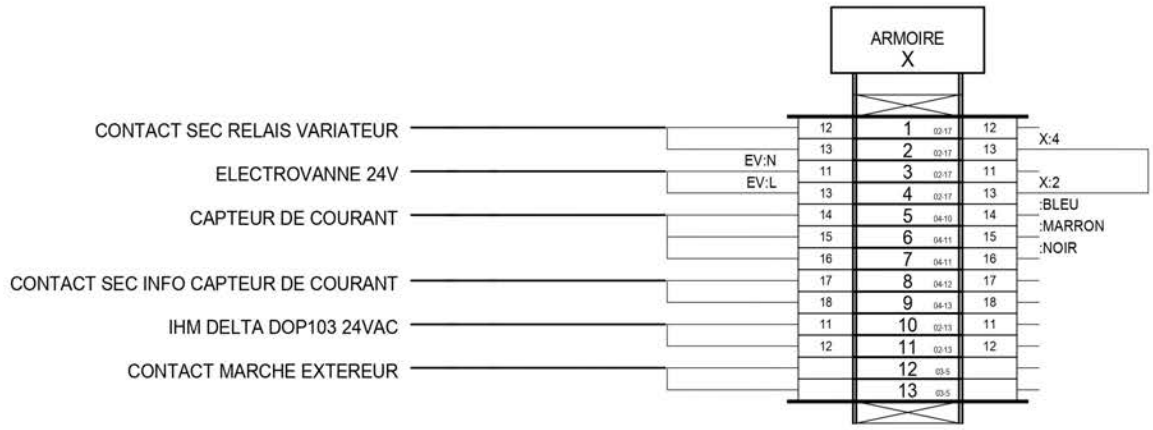
LINCOLN ELECTRIC

LINC EXTRACTOR SC

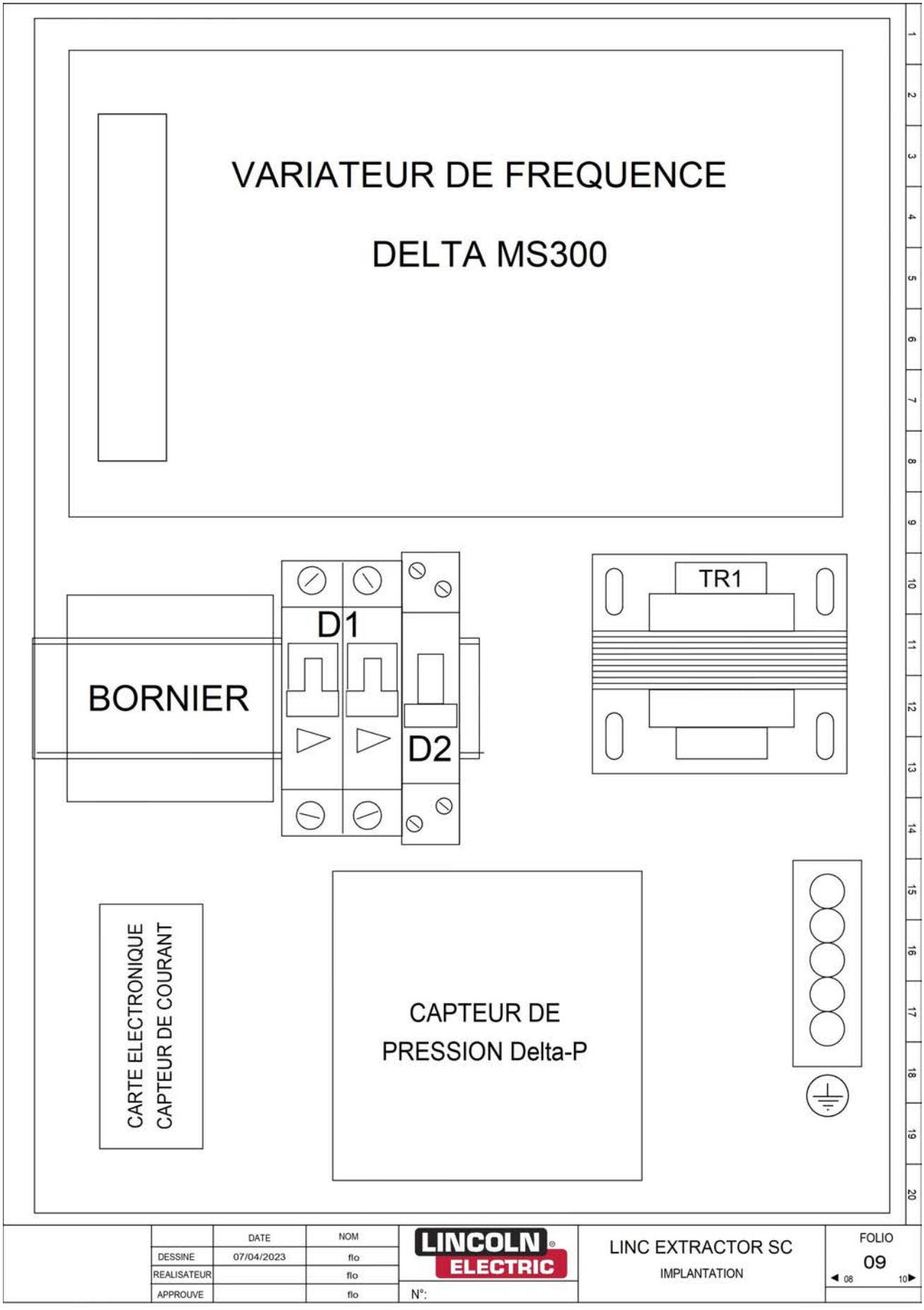
CORDON DE LIAISON V.F Ecran IHM DELTA MS300

FOLIO 07

N°:



	DATE	NOM			
DESSINE	02/05/2023	flo	LINCOLN ELECTRIC	LINC EXTRACTOR SC	FOLIO 08
REALISATEUR	02/05/2023	flo		Bornier : X	◄ 07 09►
APPROUVE	02/05/2023	flo	N°:	X - 1/1	


VARIATEUR DE FREQUENCE
DELTA MS300
D1
D2
BORNIER
TR1
CARTE ELECTRONIQUE
CAPTEUR DE COURANT
CAPTEUR DE
PRESSION Delta-P
DATE
NOM
DESSINE
07/04/2023
flo
REALISATEUR
flo
APPROUVE
flo
N°:
LINC EXTRACTOR SC
IMPLANTATION
FOLIO
09
08
10

Ordering procedure:

Almost all the parts of a machine or installation are referenced in the photographs and sketches.

The descriptive tables contain three types of item:

- items normally held in stock: ✔
- items not held in stock: ✘
- articles upon request: no reference

(For such parts, please complete the list of parts page and send us a copy. In the Order column, state the number of parts required and indicate the type and number of your equipment.)

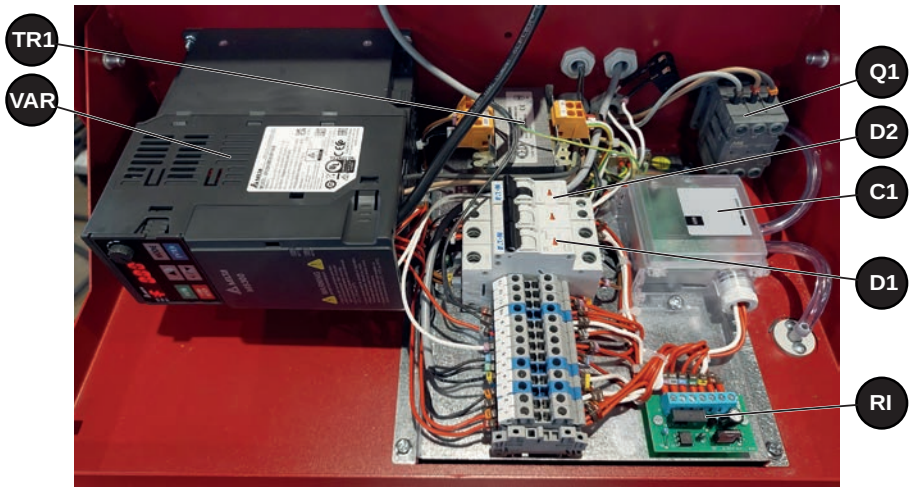
For items referenced in the photographs or sketches but not included in the tables, please send us a copy of the relevant page and highlight the relevant reference.

Example:

✔	normally held in stock.
✘	not in stock
	upon request.

Ref.	Part no	Stock	Order	Description	Qty
A1	W000XXXXXX	✔		Machine interface board	
A2	W000XXXXXX	✘		Flow meter	
A3	P9357XXXX			Printed front plates	

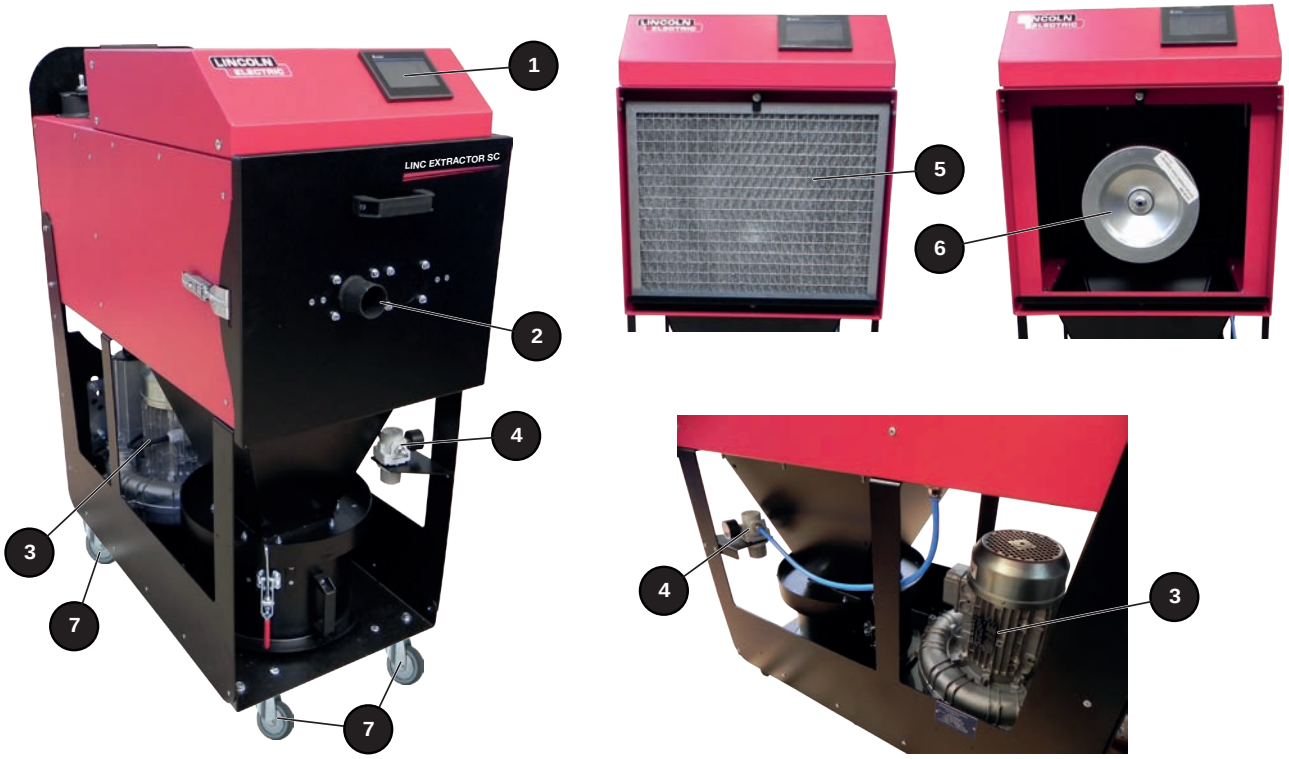
6.1 Electrical cabinet



✔	normally held in stock.
✘	not in stock
	upon request.

Ref.	Part no	Stock	Order	Description	Qty
VAR	EM61000703	✔		Frequency variator - DELTA MS300	1
TR1	W000403084	✘		400V/24V transformer	1
Q1	EM61000707	✘		Disconnecting switch Q1 – 32A three phase	1
D1	EM61000708	✘		Circuit breaker D1 – 1A	1
D2	EM61000709	✘		Circuit breaker D2 – 2A	1
C1	W000276149	✔		Pressure switch C1 – 5000PA	1
	EM61000483	✘		Plastic pressure connector	2
	EM61000493	✘		Crystal tube Ø10 – L10m	1
RI	W000384776	✔		Current sensor printed circuit board	1

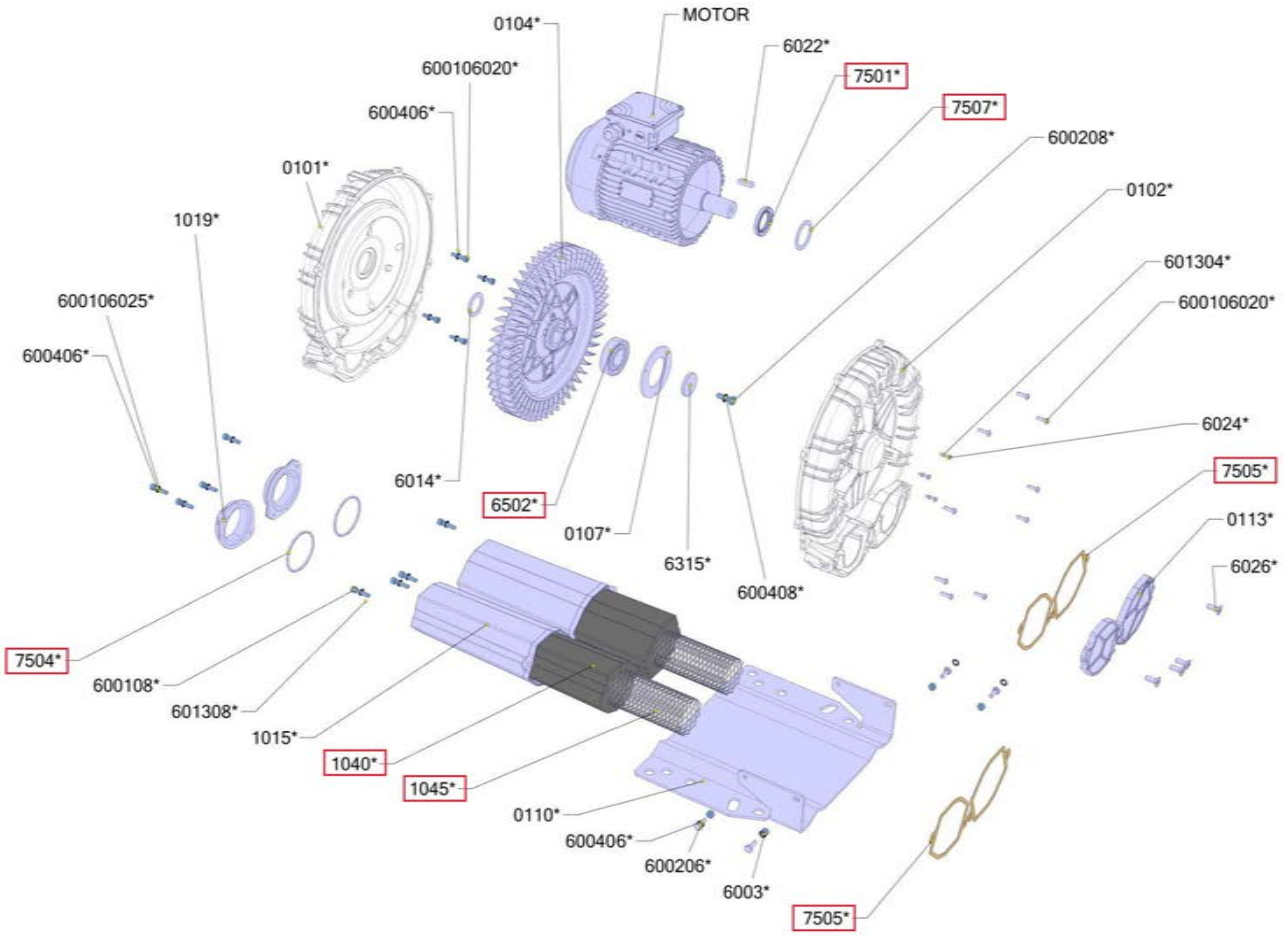
6.2 External spare parts



✔	normally held in stock.
✘	not in stock
	upon request.

Ref.	Part no	Stock	Order	Description	Qty
1	EM61000704	✔		HMI screen – DELTA DOP 103	1
2a	W000403083	✘		Ø 50 mm extraction connection	1
2b	EM61000634	✘		Ø 38 mm extraction connection	1
3	W000278615	✔		Complete turbine, K06MS – 3KW	1
4	EM61000626	✔		Compressed air regulator kit	1
5	W000340600	✔		Metal pre-filter	1
6a	W000382775	✔		Polyester filter cartridge	1
6b	EM61000754	✔		PTFE membrane filter cartridges, (class E10-EN1822)	1
7a	EM61000757	✘		Swivel front wheel + brake	2
7b	EM61000758	✘		Fixed rear wheel	2
	EM61000755	✔		Pack of 10 plastic bags	1
	S94002086	✔		Unclogging solenoid valve	1
	EM61000756	✘		Unclogging mechanism	1
	W000379696	✔		AC/DC current sensor for ground cable	1

6.3 Turbine



✔	normally held in stock.
✘	not in stock
	upon request.

Ref.	Part no	Stock	Order	Description	Qty
	W000278615	✔		Complete turbine, K06MS – 3KW	1
0104	EM61000449	✘		Blade wheel	1
	EM61000203	✘		Turbine maintenance kit including:	1
6502				Turbine bearing	1
7501				Motor sealing ring	3
7507				Sliding bearing	1
7505				Silencer seal	4
7504				Flange seal	2
1045				Silencer mesh	2
1040				Silencer foam	2

6.4 Additional accessories

✔	normally held in stock.
✘	not in stock
	upon request.

Ref.	Part no	Stock	Order	Description	Qty
	W000402140	✔		Hose, VAC Ø 50mm 5m with end fittings	1
	W000402142	✔		Hose, VAC Ø 50mm 10m with end fittings	1
	W000375488	✔		Hose, VAC Ø 50mm 15m without end fittings	1
	W000375489	✔		Set of 2 end fittings, VAC 50	1
	EM61000410	✔		Hose, VAC Ø 38mm 5m with end fittings	1
	EM61000411	✔		Hose, VAC Ø 38mm 10m with end fittings	1
	W000386139	✔		Discharge hose, Ø 80mm 5m	1
	W000386140	✔		Discharge hose, Ø 80mm 10m	1
	W000386141	✔		Discharge hose, Ø 80mm 15m	1
	EM61000353	✔		Long nozzle, 300 mm, with magnetic stand, Ø 50mm	1
	W000279767	✔		Contact type MIG torch rest	1
	EM61000580	✘		Contact type TIG torch rest	1
	EM61000235	✘		Ø 80mm discharge kit for discharge along wall cladding: · 1 Ø 80 mm spiral duct · 1 Ø 80mm 90° bend · 1 Ø 80mm meshed whistle · 2 Ø 80mm cleanliness plates · 1 Ø 80mm - 1 m long polyurethane hose · 1 set of assembly accessories	1
	EM61000236	✘		Ø80 mm roof discharge kit: · 1 Ø 80 mm spiral duct · 2 Ø 80mm 90° bend · 1 Ø 80mm meshed whistle · 1 roof waterproofing guard · 1 Ø 80mm - 1 m long polyurethane hose · 1 set of assembly accessories.	1

PERSONAL NOTES

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76121 Le Grand Quevilly cedex
www.lincolnelectriceurope.com